

# THE IRON AGE

A Review of the Hardware, Iron and Steel Trades.

Published every Thursday Morning by David Williams Company, 170 Nassau St., New York

Vol. LXIII: No. 23.

New York, Thursday, June 8, 1899

\$4.50 a Year, including Postage.  
Single Copies, Ten Cents.

Reading Matter Contents.....	page 46
Classified List of Advertisers.....	113
Alphabetical Index to Advertisers ..	118
Advertising and Subscription Rates ..	57



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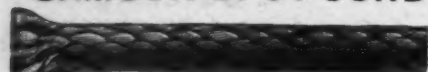
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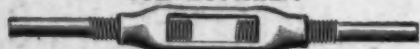
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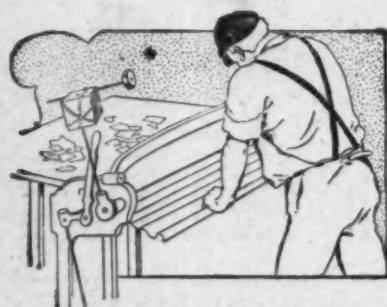
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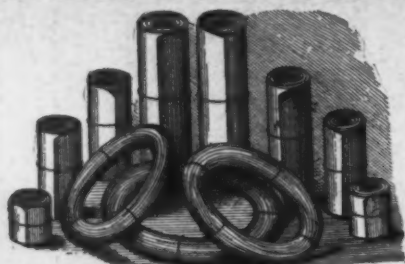
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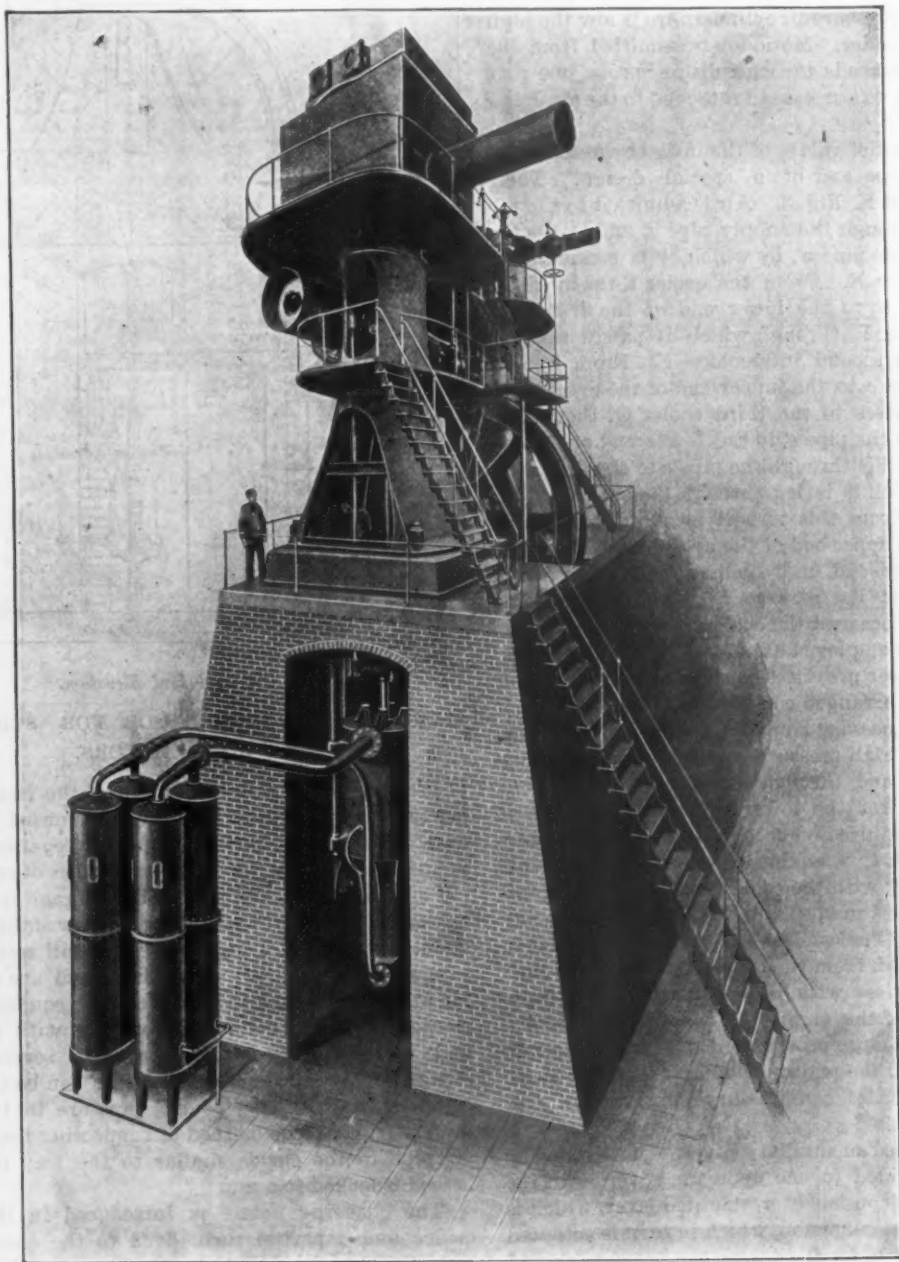
# THE IRON AGE.

THURSDAY, JUNE 8, 1899.

## Mammoth Air Compressor for Street Railroad Motors.

A compressed air plant, unusual in almost all of its features and embodying characteristics in design and construction far in advance of ordinary practice, has just

given to the designers and builders. High pressures with smaller machines are common, but pressures of 2500 pounds to the square inch in 1000 horse-power machines are essentially unique. In general the machine consists of a vertical cross compound engine built by the E. P. Allis Company of Milwaukee, which has cylinders 32 x 68 and 60-inch stroke, provided with Reynolds-Corliss valve



MAMMOTH AIR COMPRESSOR FOR STREET RAILROAD MOTORS.

been completed by the Ingersoll-Sergeant Drill Company of 26 Cortlandt street, New York. The installation was made for supplying the air motors on the cars of the Metropolitan Street Railway Company of New York. The station is located at Twenty-third street and North River. The plant is uncommon mainly for two reasons—its great power and the high pressure obtained. For the successful completion of such a machine, which enters a field practically unexplored, too much credit cannot be

given to the designers and builders. High pressures with smaller machines are common, but pressures of 2500 pounds to the square inch in 1000 horse-power machines are essentially unique. In general the machine consists of a vertical cross compound engine built by the E. P. Allis Company of Milwaukee, which has cylinders 32 x 68 and 60-inch stroke, provided with Reynolds-Corliss valve gear. With steam pressure of 150 pounds, furnished by Babcock & Wilcox boilers, and 40 revolutions per minute the horse-power is 1000. The shaft is of hammered iron, 22 inches in diameter outside of the journals and 20 inches diameter in the bearings, which are 36 inches long. The fly wheel, placed between the cylinders, as shown in Figs. 3 and 4, is 22 feet in diameter and weighs 60 tons. The engine is mounted upon brick piers and directly underneath it is placed

**The Air Compressor.**

This machine is of the four cylinder type, the low pressure cylinder being 46 inches, the first intermediate 24 inches, the second intermediate 14 inches, and the high pressure cylinder 6 inches in diameter, the stroke being common with the engine 60 inches. All of these are single acting. The free air capacity per revolution is 56,735 cubic feet; capacity at 40 revolutions, 2269.4 cubic feet, and the free air capacity at 60 revolutions is 3404.1 cubic feet. The approximate pressure in the first cooler is 40 pounds; in the second 180 pounds, and in the third 850 pounds; the final approximate pressure in the after cooler being 2300 pounds.

The compressor pistons are arranged in pairs vertically in line beneath the steam cylinders, as is shown in Fig. 3, the initial and first intermediate air cylinder being below the low pressure steam cylinder, while the second intermediate and high pressure air cylinders are below the high pressure steam cylinder. Motion is transmitted from the steam engine crossheads through distance rods, one pair for each crosshead, to a crosshead attached to the air cylinder piston rods.

The inlet and outlet valves of the initial cylinder are of the mechanical type and of a special design. These valves are shown at K, Fig. 3. Air is admitted to the top of this cylinder through the supply pipe *a*, and leaves the cylinder through the pipe *a'*, by which it is conducted to the first intercooler E. From the cooler E the air flows through the pipe *b'* to the lower end of the first intermediate air cylinder B, through which it passes through the pipe *b* to the second intercooler F. From here it passes to the pipe *c* to the upper end of the cylinder C, from which it passes to the third cooler G, Fig. 4, and from here through the pipe *c'* to the lower end of the cylinder D, and from this through the pipe *e* to the final after cooler H, from which it is led through the outlet *f* to the storage bottles. From this it will be seen that the air passes through the upper end of the cylinder A, lower end of cylinder B, upper end of cylinder C and lower end of cylinder D, and in its passage between each passing through one or the other of the coolers.

The intercoolers employed are of two different designs. The two for the lower pressures consist of a shell inclosing a nest of vertically arranged cooling pipes through which the air blows in its passage from one cylinder to the other. The coolers for the high pressures consist of a coil of pipe arranged in a shell and through which the air flows. In providing a cooler for the lower pressures where great cooling surface is required on account of the large volume of air to be cooled, it was considered proper to provide tubes, but in dealing with the cooler for the higher pressures coils were substituted so as to dispense with as many joints as possible. The coolers are arranged so that in case of a leakage of air from the cooling pipes into the shell or casing, this air rises with the circulating water up to the operating floor of the engine room and is discharged through a sight discharge pipe under the immediate care of the engineer. All the piping from the first air cylinder and through the entire compressing plant is made of copper.

What may be called an auxiliary governor, controlled by air pressure, is provided to act upon the governor of the steam engine. This consists of a weighted lever, which is operated upon by a small piston, which in turn is actuated by the air pressure. If for any reason the pressure should become excessive the lever is lifted, when it opens a valve admitting air to a device on the governor so designed as to reduce the steam supply and for all practical purposes to throttle the engine.

Some idea of the massiveness of the machine may be obtained from the bare statement that it is 60 feet in height. It will be employed exclusively for supplying air to the air motors on the street railway cars. It may be stated that since their first trial several months ago the air motors of the Hoadley-Knight type introduced on the street railroad line have given satisfaction in every instance, and have operated without the slightest imperfection.

**Use of the Compressed Air.**

Compressed air for the purpose of traction by this system is generated and collected in a manner similar to that

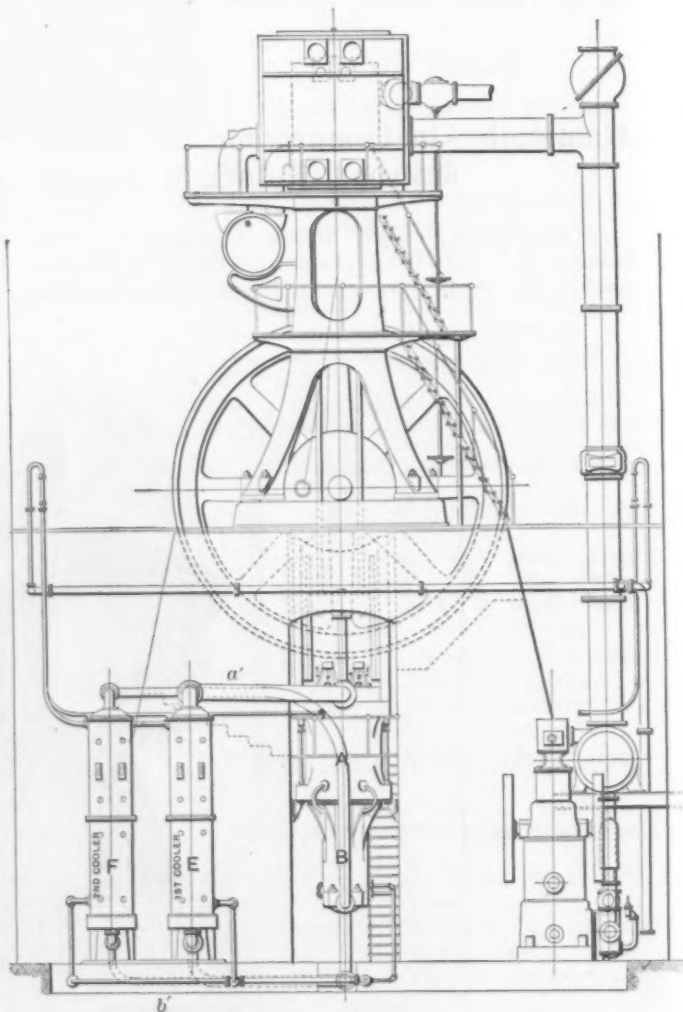


Fig. 2.—End Elevation.

**MAMMOTH AIR COMPRESSOR FOR STREET RAILROAD MOTORS.**

of generating and collecting gas, and the means necessary for the storing of air at high pressure consist in the collection of numerous bottles connected together in series or manifolds whereby the different sections of storage can be cut out from one another. In the storage system erected at the Twenty-fourth street compressor station there are about 600 bottles. These bottles are all tested to a pressure of 4000 pounds per square inch, and are used to store air at a pressure of 2500 pounds per square inch. The storage bottles are connected together with proper pipes and valves, and communicate with several charging stands in the car house. The cars can be charged with compressed air at 2300 pounds pressure in two or three minutes time. The method of connecting the compressed air pipe to the car is similar to the way in which the bresch is locked to a gun.

The charging nozzle is introduced in the charging orifice, and a partial turn given to the charging nozzle locks the charging nozzle in the charging orifice, then the main valve is opened admitting air to the car. The reheater is charged with steam in a similar manner.

The charging nozzle of the reheater is provided with a vent hole through the center whereby the coupling of the charging nozzle to the charging orifice makes communication for the steam to enter the reheater and for the vent to go out from the reheater with the one charging nozzle. In the recharging of the compressed air cars the first operation is to connect the steam charging nozzle to the reheater, and then to connect the compressed air charging nozzle to the charging orifice. This operation takes from three to four minutes. These compressed air cars are equipped with six Mannesmann tubes, three on either side

of the car, under the seats and making a storage capacity of about 45 cubic feet. This will enable the car to travel about 15 miles.

be constructed largely of an aluminum alloy of great strength and lightness—that is, the wheels, body and walking beam will be made of this metal. The axles will

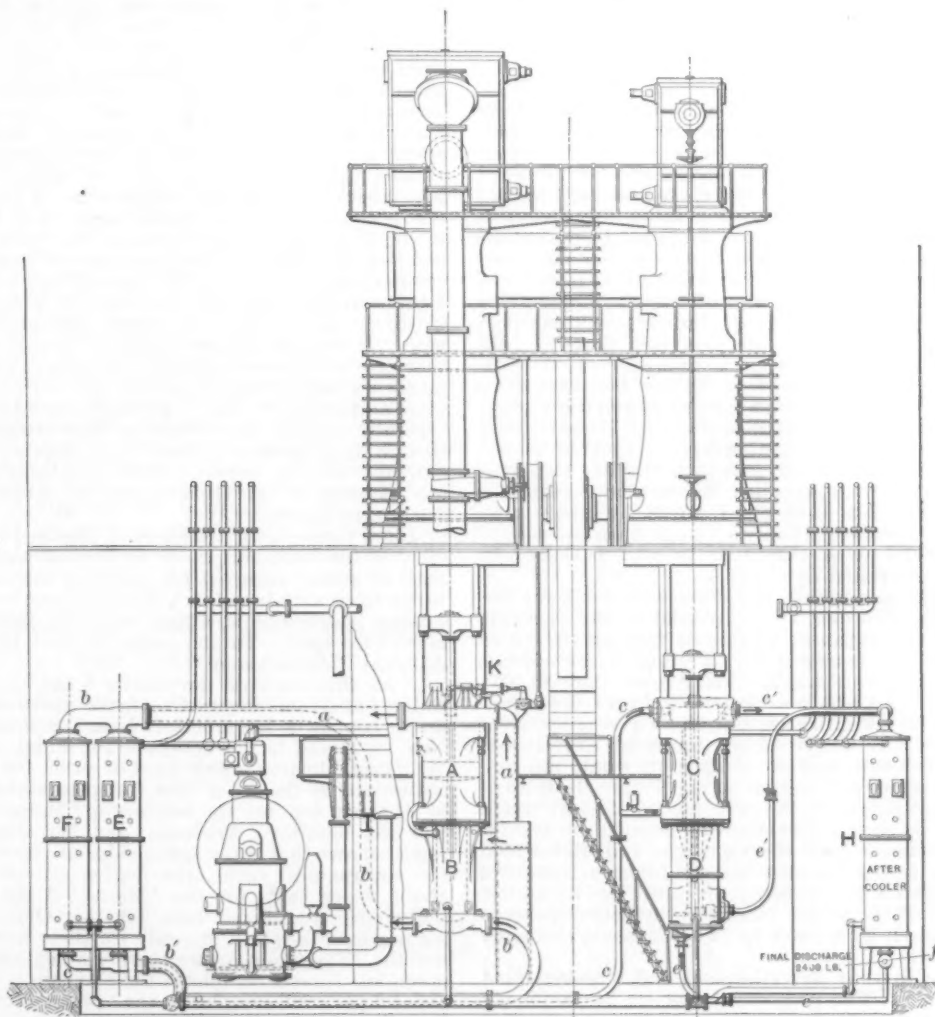


Fig. 3 - Side Elevation.

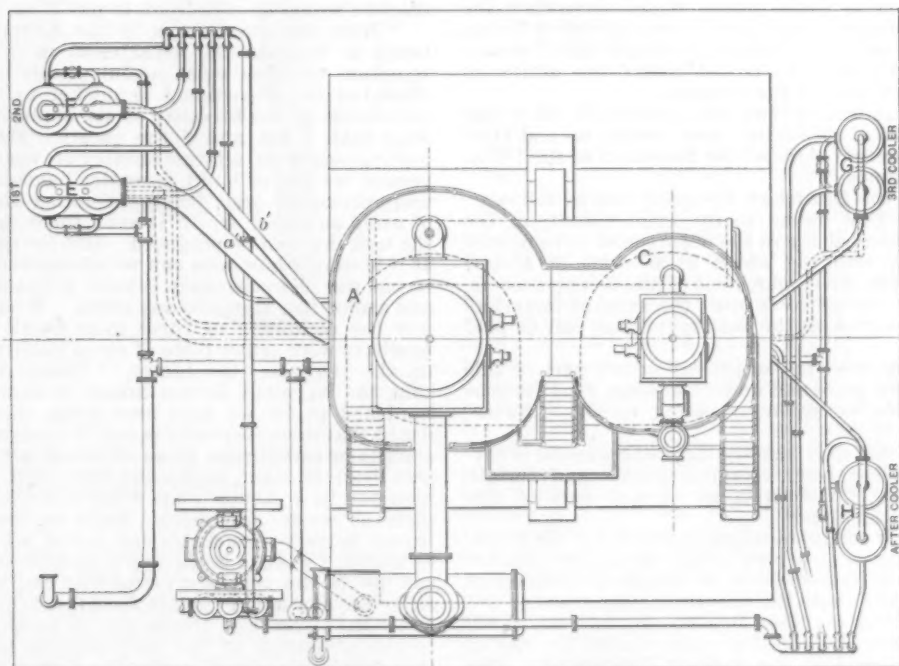


Fig. 4 - Plan.

#### MAMMOTH AIR COMPRESSOR FOR STREET RAILROAD MOTORS.

The cars and motors of this line were described and illustrated in *The Iron Age* of May 4, 1899.

An aluminum railroad hand car is being built by the St. Louis Aluminum Casting Company. The new car will

be of steel tubing. Other improvements will consist of gearing of the bicycle pattern, admitting of adjustments for speed, of ball bearings and of a hub brake, whereby brake power may be applied by simply pressing a button. The new car will weigh not more than 150 pounds, or



only about a third as much as the ordinary hand car, and one man can lift it off or on the track. It is believed that two men can easily run it from 30 to 35 miles an hour for a limited time.

### The Armor Plate Matter.

WASHINGTON, June 6, 1899.—As briefly reported by telegraph in *The Iron Age* of last week the opening of bids to supply the 24 000 tons of armor required for the four monitors and three battle ships authorized by the act of 1898 and the three battle ships and three armored cruisers provided by the act of 1899 proved a fiasco, the manufacturers equipped with armor plants declining to undertake the production of plates designed to meet the increased requirements of the department at the limit of price fixed by Congress. When the contents of the communications to the Secretary from the manufacturers were first made known the opinion generally was expressed that it would be impossible for the department to take any action without further legislation, but during the past few days there has been a decided change in sentiment and the leading officials of the department appear to be about equally divided in their views, one faction holding that the vessels now in course of construction and authorized by Congress must be provided with so called Krupp armor even if a delay of a year or more is involved, while the others urge that Harveyized plates may safely be put upon the vessels authorized by the act of 1898 at the price of \$400 per ton, which was appropriated by Congress.

It can hardly be said that the officials of the Navy Department were surprised at the refusal of the Carnegie and Bethlehem Companies to submit bids for the entire quantity of armor advertised for. Certain of the officials had hoped that a contract aggregating more than \$8,000,000 would be a sufficient inducement to impel the manufacturers to take the entire amount on an average price of \$345, as provided by Congress, but the most experienced naval officers felt sure that the contractors would not consider the \$300 armor proposition in any form. In spite of the general forecasting of the outcome no little irritation was exhibited by several officials, who pointed out significantly the evidence that the Carnegie and Bethlehem Companies are acting together in a combination to control the price at which the Government must buy its armor. The similarity of the letters submitted by both these contractors was dwelt upon forcibly. The Carnegie Company wrote as follows:

"Referring to your advertisement and circular dated March 29, 1899, inviting proposals for about 24,000 tons of armor plate and appurtenances:

"We regret to inform you that owing to the conditions with reference to ballistic requirements stipulated in the circular, in order to fulfill which would necessitate the armor plate being manufactured under the latest Krupp system, thereby entailing a much increased cost of manufacture, we are unable to tender under the minimum prices per ton set forth in the proposal.

"We are quite willing, however, to furnish all or any part of this armor under the same conditions and price governing our present contract for the armor of the 'Wisconsin' and 'Illinois.'"

The letter of the Bethlehem Company was as follows:

"We regret that owing to the great severity of the ballistic tests provided for in the department's circular of March 29, 1899, covering about 24,000 tons of armor, which necessitates the employment of the Krupp process, it is impossible for us to furnish the same at the prices stipulated by Congress as the maximum that can be paid for this armor.

"We are prepared to furnish all or any part of this armor at the same price and under the same conditions as the armor which we are now making for the 'Illinois' and 'Alabama.'"

It is pointed out that exactly the same ground is covered by both these brief communications, and certain phrases, such as "to furnish all or any part of this armor," &c., are identical.

The only other communication received by the Secretary of the Navy with regard to the armor plate matter was a brief letter from the firm of Burnstine Brothers of San Francisco, who made the following proposition:

"We can furnish the Navy Department with the 24,000 tons of armor plate advertised in your printed circular of March 29, 1899, for \$450 per ton of 2240 pounds. The above bid is for homogeneous armor plate of steel and to conform with the Navy Department ballistic test. The first delivery to begin not later than January 1, 1904."

While the bid of the above firm could not be considered owing to the price and the length of time required to make deliveries Admiral O'Neil, chief of the Bureau of Ordnance, investigated the status of the firm sufficiently to learn that they were in no position to manufacture armor plate of any description, and their proposition therefore has received no serious consideration.

After the communications of the manufacturers had been formally read Acting Secretary Allen, in reply to an

inquiry from the correspondent of *The Iron Age* as to the probable policy of the department, said:

"In the absence of the Secretary I do not feel authorized to make any positive statement as to what will be done, but I am inclined to think that the department will be forced to refer the entire question back to Congress for further legislation. The Secretary and his aides protested against the limit of price set by Congress, but after the appropriation was made the department proceeded in good faith to try and carry out the legislative enactment. The result is now known and the fact appears to be demonstrated that it is not possible to induce the American manufacturers to provide armor plate of ballistic requirements equal to the best plates now being made for other navies at the price fixed by law. The question, however, is a large one and involves a number of important considerations, among which is the advisability of constructing a Government plant, the feasibility of which was recently inquired into by a special board appointed for that purpose. It will also be interesting to inquire as to whether there are any plants in foreign countries capable of manufacturing and willing to provide the desired armor at the price authorized by law. All these considerations will be carefully looked into before a final decision is reached, though as at present advised I am disposed to believe the outcome will be simply a letter to Congress announcing the inability of the Government to obtain the armor at the authorized limit."

Chief Constructor Hichborn is disposed to take another view of the situation favoring the purchase of the 10,223 tons of armor required for the four monitors and three battle ships authorized in 1898 at \$400 per ton upon specifications practically identical with the Harveyized plates heretofore used. To the correspondent of *The Iron Age* Admiral Hichborn said:

"At this stage of the matter I can only speak unofficially, but I am disposed to favor going ahead with the armor contracts for monitors Nos. 7, 8, 9 and battle ships Nos. 10, 11 and 12, the contracts for which have been let. While establishing a \$300 limit of price for the new ships authorized by the act of 1899, Congress stated the old price of \$160 per ton for the battle ship 'Maine' and her class and the monitor 'Arkansas' and her class. Our latest report shows that these battle ships are now under way in the contractors' yards, the degree of completion being about 6 per cent. for the 'Maine,' 3 per cent. for the 'Missouri' and 2 per cent. for the 'Ohio.' It is fair to assume that they will be ready for their armor in about 18 months. The monitors are further along and will require much less time to complete; the 'Arkansas' is reported as about 2 per cent. completed, the 'Connecticut' 6 per cent., the 'Florida' 8 per cent. and the 'Wyoming' about 3 per cent. The armor for the monitors ought to be ready in about six months and if provided in that time the contractors would at once begin to put it on.

"Now, the question is, is the Krupp armor enough better to warrant the department in delaying the construction of these seven useful vessels indefinitely. No official of the department is quicker to recognize an improvement or the necessity of its application to our war ships than I am, and if the question should be that of putting armor on a large number of vessels or on all the vessels we are to build hereafter I should say we should unquestionably wait before assuming the responsibility of using an armor which is even theoretically inferior to the best that can be produced. But the question as I look at it is simply how soon can we strengthen the navy. The recent war demonstrated beyond a doubt that our ships and armor are equal to any afloat. What harm can follow the equipping of three more battle ships and four monitors with armor plate of equal quality with that used on the 'Oregon,' the 'Iowa,' 'Texas,' &c.? Conceding that the so-called Krupp armor is superior to the face hardened plates we have been using, there can be little doubt that this superiority is only demonstrable under test conditions rather than those of actual service. A chance shot dealt at right angles and very short range might be kept out by a Krupp plate when it would smash such a plate as we are now using. Such an incident, however, would be very remarkable and not at all likely to occur. Of course I wish to be distinctly understood as advocating the use of the very best plates that can be procured, but as we are now able to obtain for a few ships as good armor as we have ever been able to buy, it seems to me that it is to the advantage of the navy to go ahead and apply the face hardened armor, leaving to Congress the responsibility of saying what kind of plates we shall use on the new battle ships and armored cruisers, the contracts for which cannot be let until their armor has been provided for."

Another argument quoted against further delay is the general understanding that Krupp armor, as investigated by Admiral O'Neil, being excessively tough, requires a much longer time in the machine shop to cut and grind its edges to final dimensions and to drill for bolts, &c. Admiral O'Neil is already on record in his statements made before the Naval Committee of the Senate as advocating the use of Krupp armor under all conditions. On this

point, in a written statement addressed to Chairman Hale, he said that "whatever the price the Navy Department can take but one attitude, namely, that the best and only the best armor obtainable should be supplied to United States vessels in order that their prestige may be maintained and that they may be in all respects the equals of the ships of war of other nations." As to the policy of the department Admiral O'Neil said to the correspondent of *The Iron Age*:

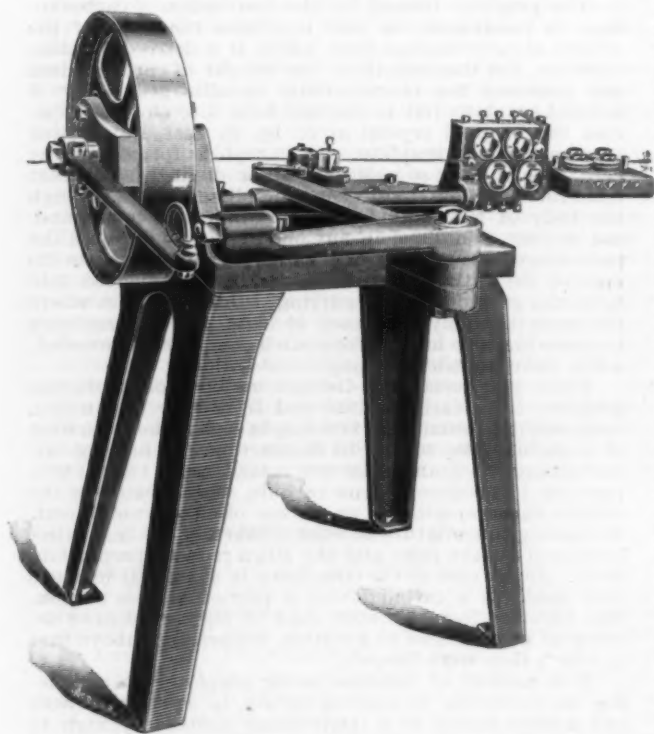
"As I look at it there is nothing left for us but to report the results of the recent opening of bids to Congress. It has been fully demonstrated that the armor manufacturers propose to hold out against any proposition which the department is now authorized to make. I regret the situation very much, but there is some consolation in the thought that there would have been considerable delay in the delivery of the armor for these vessels, even had the manufacturers been willing to make the contracts, as their plants have large orders ahead. Unless some other action is authorized by the Secretary, as soon as Congress convenes the results of the recent opening will be communicated to both houses for such action as seems appropriate."

Representatives of the manufacturers who were present at the opening made no comment on the outcome further than to call attention to their communications to the chief of the Bureau of Ordnance made last February, in which they stated that they would prefer to manufacture Harvey armor at \$400 per ton rather than Krupp armor at \$540 per ton, "not only on account of the increased cost of the latter, but also on account of the increased risk."

W. L. C.

### Automatic Short Cut Roll Wire Straightener and Cutter.

The Stover Novelty Works, Freeport, Ill., have brought out the automatic short cut roll wire straightener and



AUTOMATIC SHORT CUT ROLL WIRE STRAIGHTENER AND CUTTER.

cutter here illustrated. This machine is especially designed to straighten and cut very rapidly short lengths of soft wire up to 12 inches in length, and as a cut is made of any length in every revolution of the balance wheel it may be speeded up to cut accurately 200 lengths from 1 inch or shorter up to 12 inches. It can also be arranged to cut longer by a little change in the throw of the pitman, which is adjustable on the crank plate. The straightener attached to it is composed of 8 or 12 steel rolls (according to the requirements), through which the wire is drawn and straightened before it enters the cutter plug. These rollers are adjustable for different sizes of wires. The adjustment is very simple and can be made from one length to another in a minute by simply sliding the pitman crank in or away from the center of the balance wheel, thus giving it the necessary throw. The only wear possible is the cutter plug, which is held in by a set

screw and can be easily taken out and sharpened. The balance wheel, being counterbalanced, will permit it to be speeded up very high and do the work satisfactorily.

### The National Bankruptcy Convention.

WASHINGTON, June 6, 1899.—Much interest is being excited in Washington regarding the National Bankruptcy Convention to be held in Chicago on June 26, at which it is expected a referee in bankruptcy from each court district will be present and one or more delegates from each of the various credit men's associations, of which there are 22, as well as representatives from the National Association. The most important feature of the convention will be the discussion of amendments to the law, and it is expected that a memorial to Congress will be adopted embracing such changes as the experience of the past year has demonstrated to be advisable to remedy defects which have been developed. With a view to bringing together the various suggestions that have been made and the arguments in support thereof, Mr. Brandenburg, in charge of bankruptcy matters in the Department of Justice, has gathered a very complete collection of the proposed modifications, and in commenting upon their chief features has made the following interesting statement to the correspondent of *The Iron Age*:

"In the first place, it is to be hoped that the friends of the Federal Bankruptcy law will not permit themselves to be misled by the fact that a large number of persons without a dollar of assets have taken advantage of the present statute to secure discharges. This is a feature which is inseparable from the initial stage of the enforcement of any Federal bankruptcy law. These petitions, which have flooded the courts in certain districts, have been erroneously put down as the 'result of the passage of an ill-digested law designed simply to enable insolvent men to get rid of their debts.' The erroneous impression is also current that to a large extent these petitions represent recent failures, and numerous suggestions have been made as to how the law should be amended as to deal with them effectively in the future. As a matter of fact, these petitioners in the great majority of cases have already taken advantage of the State laws and have secured discharges in a limited jurisdiction. Many of these parties are anxious to go into business again, but as their discharges operate only in the States in which they were granted they cannot purchase goods in other States without incurring the risk of their seizure by outside creditors. This danger is specially imminent from the fact that having taken advantage of local insolvency laws their credit is somewhat impaired, and in buying goods outside the State they have been obliged to pay cash for them, thereby securing title to them and making the goods the more liable to seizure. In a recent conversation with a clerk of the Federal Court in one of the largest business districts in the United States, I was informed that 90 per cent. of the filings in that Court were of the class of cases I have described, and the clerk did not hesitate to assert that within another year this class of filings would cease almost entirely. He stated confidently that these petitions simply represented the cleaning up of arrears, and bore no relation to current procedure under the new Federal act.

"It has been recommended in this connection that the poverty oath be abolished, and that bankrupts should be required to deposit \$100 or more in order to take advantage of the law. It is certainly questionable whether such an amendment should be adopted. The spirit of the Bankruptcy act is opposed to discriminations of every character, and it is difficult to see how the adoption of such a provision would beneficially affect the creditor interest. The mere possession of a few dollars in cash would constitute no guarantee of good faith on the part of the bankrupt, and the division of such a sum of money among his creditors would be too insignificant to be worth consideration. It should be remembered that in all forms of procedure the right to sue *in forma pauperis* is recognized, and it would certainly be a remarkable departure in legislation or jurisprudence to eliminate this feature from a bankruptcy act in which of all statutes it would seem to be included by logical inference.

"It is certainly unfair to condemn the law by declaring it to be 'simply a vehicle by which the dishonest swindler may enter business again.' As a matter of fact, the law provides against the discharge of a man who has been a dishonest swindler, and in addition it should certainly be clear that a bankrupt who has taken advantage of the Federal statute starts in business again without credit, and as a marked man to whom no credit need be given except at the option of the seller. How can it be said, then, that such a man, however evilly disposed, may 'enter business again to deprecate upon the unwary?' Under the operation of the law his discharge is a further guarantee that he has complied with the provisions of the law, and future transactions with him cannot be said to be made in the dark by those with whom he may seek to deal.



"There is much force in the suggestion, however, that Section 14, which provides for discharges, should be made more stringent by refusing a discharge to a man who has misrepresented his financial status or credit for the purpose of obtaining goods. The law does not now cover this class specifically, but I think it will be conceded by business men that the case of a man who fraudulently deceives a creditor as to his financial condition and thereby obtains a quantity of goods which he could not otherwise have secured should be denied his discharge when he seeks to obtain it under the Federal statute.

"There have been various suggestions as to whether an amendment might not now properly be added to the law providing that after a certain date a minimum limit of proportionate assets to liabilities should be required as precedent to a discharge. This limit has been variously discussed at from 20 to 83 per cent. There are some arguments on both sides, but I think such a step should be taken only after very careful deliberation. Certainly it is well that no such provision was made at the outset. It is, perhaps, an open question as to whether such an amendment might not now be adopted to take effect some time, hence in view of the fact that opportunity has been given for the rehabilitation of bankrupts who had already secured partial relief under the State statutes.

"An interesting amendment has been suggested providing that under certain conditions a debtor's discharge should be left to a majority vote of his creditors. The law now provides that compositions can be made under certain circumstances, such compositions having the full force of a discharge except as to the debts specified. It is conceivable that cases might arise in which a man would be unable to realize any assets, and yet in which his creditors would be willing to see him completely rehabilitated. The proceedings in bankruptcy could then be curtailed and expedited by a majority vote under such an amendment as that described. It is an open question whether the liberal views that might be taken by a majority of the creditor class would be offset by the spite which a few might feel. I think, however, that the adoption of such an amendment might be left to the vote of any representative gathering of credit men.

"I think an excellent suggestion has been made to the effect that a penalty should be provided for bankrupts who increase their purchases on the eve of insolvency for the purpose of padding their assets. It has been pointed out that the laws relating to replevin are construed strictly against creditors, and it is difficult to sustain such actions unless the debtor has made false statements of his financial condition. Of course a party contemplating bankruptcy would be careful to avoid this pitfall, and, knowing that the end was in sight, he could operate shrewdly to increase his stock without incurring any risk of punishment."

Mr. Brandenburg is giving special attention to the subject of fees under the Federal law in view of the pressure from referees and others to have them increased. He is not yet prepared to indorse this movement, and is disposed to emphasize the fact that the present statute was passed for the express purpose of reducing the cost of proceedings in order that estates should not be frittered away in the course of litigation. As to the complaints that creditors are obliged to incur certain expenditures in beginning suits against their debtors Mr. Brandenburg calls attention to the fact that this is true in every form of legal procedure, and operates merely as a safeguard to prevent unprincipled or malicious persons from instituting prosecutions on trifling pretext and in bad faith. W. L. C.

A new method of testing the efficiency of coverings for steam pipes was described by Charles L. Morton before Section D of the American Association, which should be capable of yielding more accurate results than those in common use. By this method a section of the steam pipe is heated electrically by means of a coil of wire in oil within the pipe. The amount of energy necessary to keep the pipe at a definite temperature is measured. Since the energy thus supplied is just sufficient to maintain a constant temperature it must therefore equal the energy lost by the pipe. Hence, from the electrical energy supplied, the author is enabled to calculate the heat lost from the outside of the pipe.

The International Car Wheel Company, with a capital of \$15,000,000, were incorporated last week under New Jersey laws. The company will manufacture car trucks and wheels. The incorporators are P. H. Griffin and T. Guilford Smith of Buffalo, Edgar McDougall and T. J. Drummond, Montreal; Albert D. Bosson, Boston; H. L. Satterlee, New York; Howard K. Wood, Jersey City, and J. Fred. Pierson, Ramapo, N. Y.

Workmen from the Chicago Ship Building Company's yards have been sent to England to introduce in the ship yards of that country pneumatic riveting machines of American manufacture.

## The Manufacture of Graphite.\*

BY E. G. ACHESON, NIAGARA FALLS, N. Y.

Very early in my experiments on the manufacture of carborundum I noticed that graphite occasionally formed in the portion of the furnace charge lying next to the cylinder of granular amorphous carbon, which passed through the center of the furnace, and which became heated to an extremely high temperature, by the passage of a heavy electric current, and around which the charge was placed to receive the heat necessary for the formation of carborundum. Also that when ordinary bituminous coal coke was used to form the core quite a large amount of it was converted into graphite, whereas when petroleum coke was used very little of it was made graphitic.

By a careful study of these formations it was found that the graphite formed outside of and surrounding the core was produced by the decomposition of the carborundum, which is, chemically, a carbide of silicon, and, by induction from a number of known facts, that that formed within the core was also produced from a similar decomposition of carbides, which were created by the chemical union of the carbon of the core with its contained impurities. The facts from which I have drawn this conclusion are:

1. Comparatively pure petroleum coke produces practically no graphite.
2. Impure bituminous coal coke produces large quantities.
3. The larger the known percentage of impurities in the bituminous coal coke the greater the amount produced.
4. That only a part of the carbon of the core is converted into graphite. This not being increased, even by repeated use of the same grains in successive carborundum furnaces.

The graphite formed by the destruction of carborundum is remarkable in that it retains the form of the crystal of carborundum from which it is derived. It has, however, less than one-third the weight of carborundum and possesses the characteristic metallic gray color of natural graphite, but in size and form it so closely resembles the original crystal as to be, in fact, its skeleton pseudomorph in graphite. The graphite formed in the core is usually not so well defined, or distinct, as in that from carborundum, most of it being disseminated through the body of the individual grains in which it is found, the amount contained in any one grain varying with the percentage of impurity originally present. In some instances the entire mass of the grain is converted into beautiful graphite, this occurring, I think, in cases where the grain is largely composed of slate, and it sometimes happens that one half of the grain is completely converted, while the remainder is changed but little.

These two seemingly distinct methods of producing graphite from carborundum and from coke are, in fact, identically the same; the first step in each is the formation of a carbide, the second its destruction. In making carborundum, silica and coke are mixed in the correct proportions to produce a true carbide, when heated in the electric furnace, without an excess of either constituent. In making this mixture account is taken of the impurities contained in the coke and the silica reduced proportionately. In the case of the core there is a natural mixture that produces a carbide from a portion of the carbon. The carbides formed under both of these conditions decompose when heated to a certain temperature above that at which they were formed.

This method of manufacturing graphite I would define as consisting in heating carbon, in association with one or more oxides, to a temperature sufficiently high to cause a chemical reaction between the constituents, and then continuing the heating until the combined carbon separates in the free state. It is not, however, limited to the use of oxides, as pure metals, their sulphides and other salts may be used; but for various reasons the oxides are to be preferred.

### Theory of Formation.

All of the methods of manufacture thus far known contain the same underlying, fundamental principle. Each of the six methods described by Muir, as well as my own method, contains as a part of the process the expulsion or liberation of the carbon from a chemical association with one or more elements, and this occurs under conditions unfavorable to, or absolutely prohibitive of, its re-association with the same or other elements. It is cast out, free to take unto itself such physical or other properties as we must assume properly belong to it in the free state when formed under normal conditions. It has been shown by Moissan that when subjected to great pressure, at the moment of separation from cast iron, carbon has

\*From a lecture delivered before the Franklin Institute of Philadelphia.



those distinctive characteristics that cause it to be called diamond, while Scheele showed in 1778 that the same carbon, separating from the iron without pressure, takes the graphitic form. Amorphous carbon, the third allotropic form, never occurs pure and is invariably produced from carbon held in chemical association with other elements under conditions favorable to free chemical action between it and other elements.

The production of graphite by Rose's method—heating a diamond bedded in charcoal to the melting point of cast iron—is a beautiful illustration of the return of a body under strain to the form it takes under normal conditions. It will be noted that the diamond was heated to the temperature at which it is known to form, as shown by Moissan's experiments; also that it was fairly well protected from chemical action.

The statement in the *Encyclopædia Britannica* that both diamond and amorphous carbon are converted into graphite when heated by a powerful electric current is very commonly held, indeed I might say universally, although Berthelot concluded from his investigations that heat alone is without influence on carbon—that is to say, graphite is not changed to amorphous carbon, nor the amorphous to graphite, when heated to whiteness in an atmosphere of hydrogen or chlorine. That diamond will change to graphite when protected from chemical influences under the influences of high temperature is undoubtedly true, and, indeed, is what might be expected from other known facts; but that pure amorphous carbon will change to graphite as the simple result of heating is not proven, and certainly it does not occur at or below the temperature necessary for the transformation of the carbon in a carbide to graphite.

From the facts in hand I have deduced the following theory:

1. Graphite is the form which carbon assumes when freed from chemical associations under conditions of low pressure and protection from chemical influence.

2. Diamond is the form which carbon assumes when freed from chemical associations under conditions of high pressure and protection from chemical influence. And, by inference,

3. Amorphous carbon is the form which carbon assumes when freed from chemical associations under conditions of low or high pressure and exposure to chemical influence.

This theory does not, however, account for all of the observed facts, and must be supplemented by the hypothesis that catalysis occurs, under certain conditions, during the transformation of amorphous into graphitic carbon. The amount of graphite produced in the core of a carborundum furnace and also in graphite articles I have made is much too great to be accounted for by the theory that it is formed by the dissolution of the fixed carbides formed by the contained impurities and carbon sufficient to satisfy the chemical formula. The most probable and satisfactory explanation is that a catalytic action occurs—a progressive formation and dissolution of carbides. The temperature being much above the point of volatilization of silica and all other possible impurities, a rapid dissipation of the active agents takes place and is completed in this case before the conversion of all of the amorphous carbon can occur.

#### Commercial Manufacture.

As the result of my investigations and deductions I think the only commercial way to make graphite is by breaking up a carbide by the action of heat. The carbon should be freed from chemical combination by what might be termed the evaporation of its associated elementary substances. I have secured patents covering this method, and these have been made the basis for the organization of an incorporated company bearing the name Acheson Graphite Company. The company have now under way the erection of works at Niagara Falls, where the necessary electric current will be obtained from the Niagara Falls Power Company.

Several distinct forms of the product will be produced. One consists of forms or articles made out of amorphous carbon with the desired amount of impurity added thereto, which will afterward be heated in an electric furnace and converted, more or less, into graphite. I have been carrying on this line of manufacture for a year or more, using the furnaces of the Carborundum Company to produce the graphitization, the articles having first been made by the arc light carbon manufacturers. Over 200,000 carbon electrodes, measuring 15 inches in length, with about 1 inch cross sectional area, were made for use in the Castner alkali process, nearly one-half of them having been shipped to Europe, to be used for this work in England and Germany. The life or efficiency of these graphitized electrodes is many times that of the same electrodes ungraphitized. I have also graphitized some tons of carbon plates, to be used in making dynamo and motor brushes, and a large variety of odd forms and sizes for divers purposes.

Another product—the one which will probably be of greatest importance—is an intimate mixture of pure amorphous carbon and graphite in fine powder. This will be put on the market for paint and foundry facing, and, as it has been formed at an extremely high temperature, it is quite pure, and possesses all of the qualities desirable for the purposes for which it is intended.

It is not the present intention of the company to enter into the manufacture of their product into finished form for the general market, but rather to encourage those who are now engaged in making up the natural graphite into articles of commerce to become buyers of their material, substituting it for that now used.

The company's plans now being carried out provide for the erection of a brick and iron building, 100 x 50 feet, on a plot of ground in Block No. 8 of the Niagara Falls Power Company's lands (adjoining the works of the Carborundum Company). Therein they will erect machinery for reducing coke to grains of the desired size, an electric furnace through which the prepared grains will pass in a continuous stream, a pulverizer for reducing the grains as received from the furnace and a scalping sieve through which the product from the pulverizer will pass that particles exceeding the 1-200 inch diameter may be removed. The final flour or powder will contain an amount of pure graphite proportionate to the percentage of impurities in the original coke. It is quite possible that, instead of using high grade, marketable coke, the fine refuse from the coke ovens, which is at present a waste material, will be utilized in the manufacture of this product.

In this connection I would call attention to the need of a specific name for the new product. Artificial, as applied to a product chemically and physically identical with that made by nature is not pleasing; it conveys the impression that, failing to produce the real thing, a cheap imitation, a sham, is being palmed off as the genuine article. Not even the *Century Dictionary's* definition of artificial, as "made or contrived by art, or by human skill and labor; opposed to nature," is sufficient to banish this feeling; for, after all, in the particular case in hand, being ignorant of the exact methods pursued by nature, we may be simply forcing her to reveal her methods, to the final results of which we neither add nor subtract one jot or tittle. The same objections may be made to the expression artificial manufacture of graphite, for we may not be sure that the process forced upon her is not identical with that of her own selection. Manufactured graphite would be quite appropriate were it not for the fact that it is popularly applied to articles made of graphite.

It may not detract from the general interest in this subject to call attention in closing to the fact that graphite, first shown to be an elementary body, an allotropic form of carbon, in the first year of the nineteenth century, is in this, the last year, made to order in great quantities, and that it will before the close of the century become an article of ordinary commerce in its new form. Perhaps it will take its place as the primitive form of carbon—the one it assumes under normal conditions.

#### Wage Scale Conferences.

A conference of representatives of the Tin Workers' International Protective Association and officials of the American Tin Plate Company is being held at Chicago on Wednesday for the purpose of fixing wages of tin house labor for the ensuing year. It is stated that this class of labor embraces about 10,000 men. The representatives of the Tin Workers' Association that have been appointed to attend the conference are Geo. Powell of New Castle, Pa.; T. F. Berry and W. O. Moore of Elwood, Ind.; John Romboldt, Ellwood City, Pa.; Hugh J. Scanlon, Pittsburgh, Pa.; Chas. Lawyer, Atlanta, Ind., and L. S. Harris of Wheeling, W. Va. The tin house workmen are asking for a 20 per cent. advance over present wages, to become effective on July 1. This organization embraces in its membership employees of tin plate plants not admitted to the Amalgamated Association, which also asks a similar advance in its new scale. The two organizations will support each other in securing their demands.

It is probable that on June 8, 9 there will be a meeting of the Sheet Mill Committee of the Amalgamated Association with a similar committee from the Association of Iron and Steel Sheet Manufacturers, with headquarters in Pittsburgh. It is desired to hold the conference early, so that a new wage scale for the year beginning July 1 may be arranged as early as possible. In the present active condition of the sheet market the manufacturers desire to avoid a shut down even for one day, and the workmen are also anxious to have the scale arranged quickly so that there may be no loss of time. While the sheet mill employees this year ask for an advance of about 15 per cent., it is believed that an early settlement will be effected, although the demands of the men may have to be somewhat modified.

## German Rolling Mill Engines.\*—I.

BY C. KIESSELBACH, RATH, NEAR DUESSELDORF, GERMANY.

A review of the recent development in rolling mill engines shows that the progress has been principally due to the substitution of wrought iron by steel. The question of economy in the consumption of steam became urgent when the puddling and heating furnaces ceased to furnish enough steam for the plants. At the same time the fact that the material is harder and is being rolled in longer lengths called for stronger engines with higher speeds. The problem for the engine builder, therefore, consisted in increasing the power of the engines and at the same time in reducing their steam consumption. Of all the leading industrial countries Germany probably has the highest coal prices, and this may fur-

must be increased by 30 to 45 per cent. even with large engines, and the figures rose above that with an early cut off. These drawbacks grow with the increasing steam pressure, and with the increased efficiency of the condenser, because the difference in temperature between the high pressure steam entering the cylinder and the exhaust steam going to the condenser grows with the steam pressure, and because, furthermore, with great differences in pressure, small leakages allow of very considerable losses of steam. So long as a single cylinder engine works with a low cut off it is not difficult to create a vacuum; but, as is well known, rolling mill engines are frequently overloaded, at least temporarily. Then the steam at the end of the stroke still has a high pressure and it becomes difficult to make the vacuum immediately effective. Even if the designer succeeds in solving this question, the effect of the condenser is considerably affected on account of the lowering of the temperature.

All these points take more favorable shape in the case of the compound engines. For the same expansion the cut off in the high pressure cylinder is twice or three times later. The low pressure cylinder always acts with a low cut off and the result thereof is that the steam

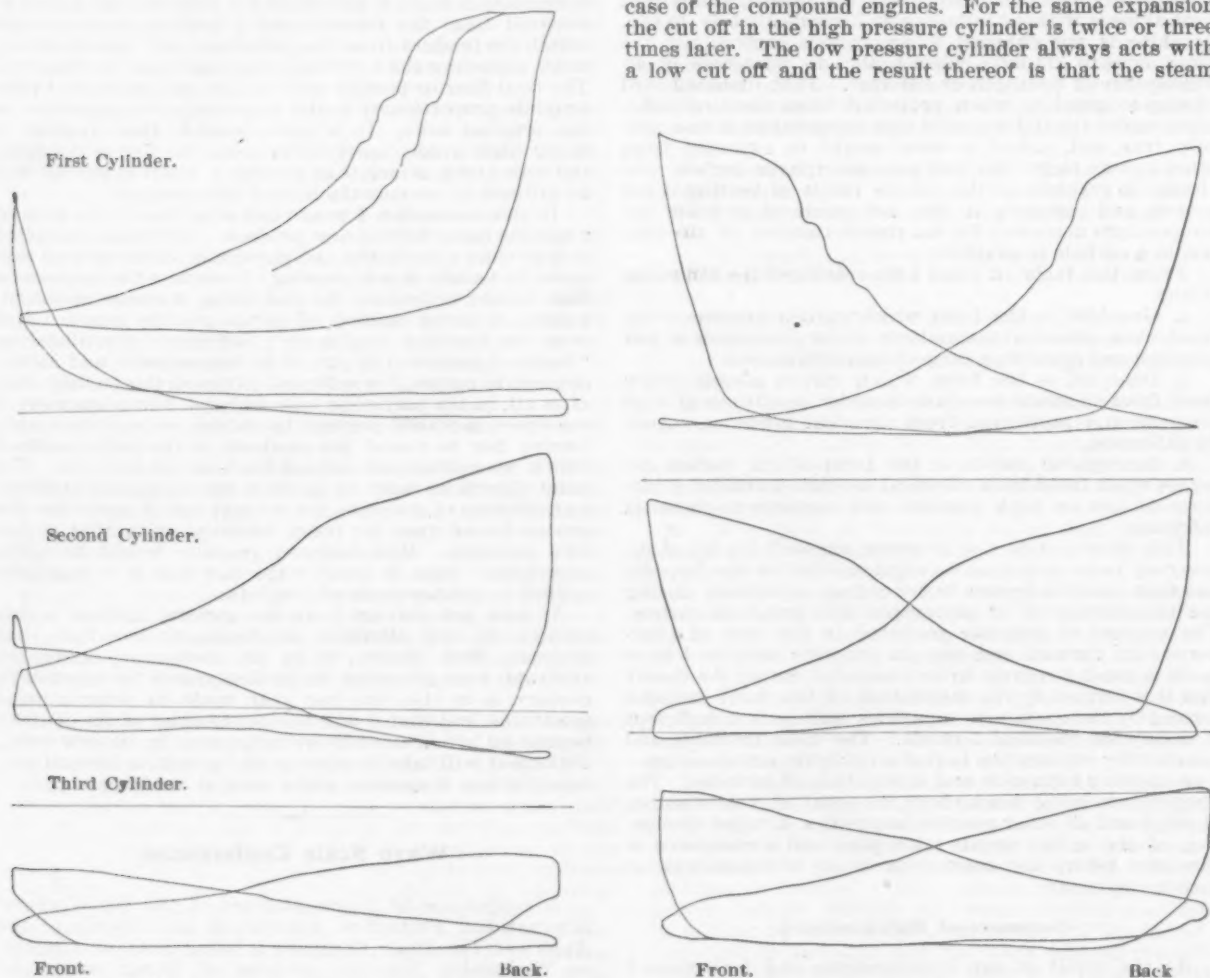


Fig. 1.—Diagram of a Triple Expansion Engine, Built by the Sundwiger Eisenhütte, Sundwig, Westphalia, Germany.

nish the reason for the development of the modern German rolling mill engines. With nearly all new plants high pressures of 8 to 10 atmospheres are general, and compound or triple expansion engines are used, at least with all fly wheel engines. The following advantages are looked forward to in compound or triple expansion engines.

1. Utilization of high expansion.
2. Lessening of the decline in temperature in the cylinders.
3. Lessening of the losses of steam occasioned by leakage.
4. Better action of the condensers.

In single cylinder engines the high steam pressures due to early cut off are met with near the dead center, so that a disproportionately large loss through friction is unavoidable. The dead spaces act in an unfavorable manner, which compression cannot counterbalance. The losses through the decline in temperature and leakage are very great with single cylinder engines. The high pressure steam partly condenses on the cooled cylinder walls and another part of it is lost through leakage direct to the exhaust or into the condenser. Therefore the consumption of steam, calculated from the cards,

pressures are distributed more uniformly over the whole stroke. The dead spaces to be filled by the fresh steam become small on account of the small dimensions of the cylinders, and the compression in both cylinders may be readily carried closer to the boiler pressure. The fluctuations in temperature are about one-half those of a single cylinder engine. Leakages, other things being equal, are less in the high pressure cylinder than in the single cylinder engines, because the dimensions of pistons and valves are smaller, and because the difference in pressure is considerably less on account of the receiver pressure. In addition thereto that part of the steam lost by leakage enters the receiver and therefore goes to the low pressure cylinder, and is to some extent utilized. Low cut offs are not possible, and therefore under the circumstances the expansion is well utilized and a good vacuum can be obtained.

It may be admitted at once that the advantage of well distributed declines in temperature is obtainable only with engines under constant load—for instance, blowing and pumping engines. Owing to the frequent fluctuations in the load, which often vary from a full load to running empty, considerable loss by condensation takes place in the cylinders, receiver, &c. That will be quite clear when it is considered that in running without a load or a light load the vacuum with the low tempera-

\* Abstract of a paper read before the Verein Deutscher Eisen Huettenleute.

tures connected with it has its effect not alone in the low pressure cylinder but also in the receiver and the high pressure cylinder.

The point must be made against this that engines under constant load do not utilize many advantages of com-

single cylinder rolling mill engines is largely due to the fact that the cut off varies within very wide limits as the result of the fluctuations in the load. Many a designer strives to make the governor as sensitive as possible, and if under such circumstances the fly wheel has

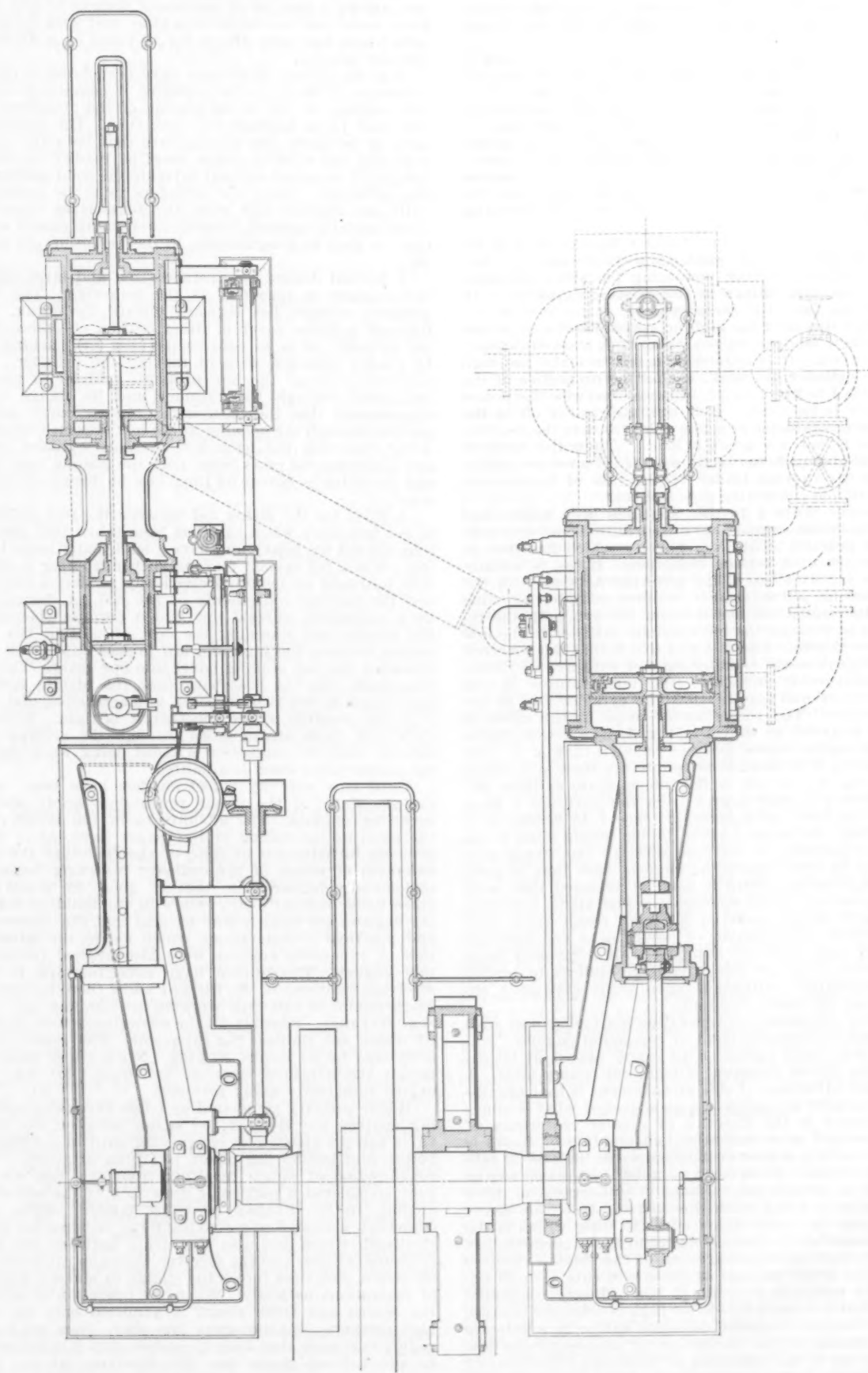


Fig. 2.—Triple Expansion Rolling Mill Engine, 1000 mm. Stroke, 75 Revolutions, 13 Atm. Pressure, Built by Sundtger Eisenhütte, Sundeig, Westphalia, Germany.

pounding like the rolling mill engines. For instance, the losses through leakage are considerably less in the case of the latter. The uninterruptedly heavy service naturally makes it probable that all parts cannot be kept in as good a condition, therefore the rolling mill engine feels the lessening of its losses by leakage most keenly.

The unfavorable consumption of steam of ordinary

a middling though adequate weight the governor jumps in a lively manner. In some cases a considerable saving in steam has been obtained by limiting the governor movement at the lower boundary, and thus making maximum fluctuations in the cut off impossible.

Compound engines, from the nature of the case, do not admit of late cut offs. This means a considerable



economic advantage for the rolling mill, which has little significance for compound engines under uniform load. In the case of a single cylinder engine under uniform normal load it is possible to have the vacuum uniform during the entire stroke of the cylinder. This, as already stated, is very difficult in the case of single cylinder rolling mill engines. Therefore if this problem can be better solved in the case of compound rolling mill engines, then that means an advantage especially for the latter type of engine.

Summarizing, I may say that so far as the falling in temperature is concerned compounding for rolling mill work has not the same significance as it has for mill engines or marine engines, but that the other advantages of compounding are particularly striking in this line.

It will not do to be misled by the fact that the actual steam consumption per indicated horse-power is pretty large; the point to be considered is the comparison between the single cylinder rolling mill engine and the compound engine working under the same unfavorable conditions.

I have had occasion to rebuild a number of well designed single cylinder condensing valve engines into tandem engines without increasing the steam pressure and by inserting linings in the existing cylinders. In spite of the fact that these engines, on account of the large dead spaces in the high pressure cylinder, were not equal to new tandem engines, their work showed extraordinary saving. It is a good plan not to make the high pressure cylinder too small, so that the proportion of the cylinder is 1 to 2 or 1 to 2.3, because otherwise the power in reserve is too small. It is well also to cut off in the low pressure cylinder at a low point, so that the receiver pressure is not too great a load. Then the receiver should not be made too large, so that its pressure adapts itself to the varying loads. In the case of tandem engines a simple connecting pipe suffices.

In recent years a further step has been taken, and triple expansion engines have been introduced into rolling mill practice. This is a novelty which has met at the outstart with serious objections. If, as is usually done, so far as I know, the governor acts only on the high pressure valve, then it requires considerable time before the regulation has reached through both the receivers and through the intermediate cylinder to the low pressure cylinder. The result of this is that the governor at the high pressure cylinder cuts off within wide limits. This unfavorably influences the temperatures in the high pressure and the intermediate cylinder and in the first receiver. The formation of loops in the cards is difficult to avoid, as shown in Fig. 1, which were taken from an engine whose design is shown in Fig. 2. To what extent it is possible to counteract these difficulties by making the cut off in the intermediate cylinder dependent to a certain degree from the governor I have not investigated. In a favorable case I do believe it to be possible. So far as I know, in our rolling mills it has not been possible to compare directly the steam consumption of triple expansion engines with that of good compound engines. Still it may be assumed that with steam pressures of 12 atmospheres and above a certain lowering in steam consumption may result from such trains whose consumption of power does not fluctuate too much and which are supplied with sufficiently large fly wheels. Whether this advantage suffices to justify the complications attendant upon triple expansion engines I am not ready to admit.

Having discussed the general points I may now turn to the practical arrangement of compound engines.

The compound engine, with crank placed at 90 degrees, has almost disappeared from our rolling mills. A particular advantage of this arrangement is that the pistons are readily accessible. A good deal of what is otherwise claimed in the direction of greater uniformity of revolution and more favorable consumption of steam is incorrect, or is a matter of indifference in the case of rolling mill engines. Even for wire mills the tandem engine is given the preference, because it is desirable to drive the first train direct from the engine. It is this direct coupling of the engine shaft with the train which is the chief reason for the preponderance of the tandem engine. The better governing on account of the smaller receiver and of the direct passage of the steam cuts a small figure. The reproach is made to the ordinary compound engine that it is not suitable for high revolutions because the low receiver pressure does not suffice to accelerate the movement of the reciprocating masses of the low pressure end at the beginning of the stroke. Fortunately this reproach, based on theoretical grounds, is not justified, and this is no good ground for giving up the compound engine with cranks at 90 degrees.

When the problem is to drive a train right and left from the tandem engine it is possible when both the trains run at equal speeds to select a double crank shaft. If one of the two trains is subject to heavy blows the fly wheel must be placed on the corresponding side. As

a rule, however, heavy blows must be expected on both sides, and then it is best to place a fly wheel both on the left and on the right side in order to relieve the shaft of strains. When the trains are driven at different speeds one may be coupled direct and the other be driven through gearing. Many a millman will distrust such an arrangement. The statement may be made, however, that among a number of successful designs of this character there may be instanced a plate mill with 3.5 meter rolls which has been driven for 10 years by a fly wheel through gearing.

A great variety of designs have been brought out by a number of firms in the building of compound rolling mill engines, so far as the placing of the cylinders, pistons and valve motions are concerned. The considerations to be taken into account are that both the piston rods and the stuffing boxes must be readily accessible and easily mounted without injuring the solid position of the cylinders. Both the cylinders must be connected with one another and with the foundation frame by direct metallic contact without intervening elastic materials, so that no irregularities in the mounting are possible.

A normal design for average sized and large rolling mill engines is regarded as the following: The high pressure cylinder lies forward toward the crank. The forward cylinder cover is either cast in one piece with the cylinder or is so constructed that the packing can be readily changed without moving the cylinder. The forward cover of the low pressure cylinder is pushed backward through the cylinder and its flange is so dimensioned that the back high pressure cover can be pushed through the opening in the low pressure cylinder. After removing the back low pressure cylinder cover and loosening the cross head, both the pistons, their rods and the cylinder covers on them can be drawn out backward.

A guide for the piston rod between the two cylinders is not necessary when care has been taken that the pistons are not too heavy and have a sufficiently large bearing. When for special reasons such a guiding is desirable it should be mounted elastically so that it can follow the vertical movements of the rod. A design has been repeatedly carried out which permits shortening the engine and lessening the cost of uniting the two covers between the high and low pressure cylinders and throwing the two stuffing boxes into one cover. This arrangement has the drawback that the middle stuffing box, which serves two purposes, is inaccessible, and that it is not possible to see whether it is tight. When it does leak fresh steam flows through the stuffing box directly into the condenser without doing work during the period when steam is admitted.

Until now only fly wheel engines have been mentioned. Many of the points referred to apply also to reversing engines. The advantages of the latter from the point of the rolling mill manager have led to their growing introduction in spite of the fact that the consumption of steam of the ordinary reversing engine is undoubtedly higher than that of good fly wheel engines under normal loads. Since in shipbuilding reversing engines are used it was natural that the theoretical and practical considerations which led to the introduction of expansion engines were also applied to rolling mill engines. Englishmen have gone forward in this direction for decades. So far as I know there is only one single engine of this type working in Germany, and that is at Hayange. Possibly all the advantages were expected which are claimed for expansion. The result, however, was by no means striking. Neither was there attained the expected economy in steam, nor was the engine sufficiently easily reversed.

When ordinary compound or triple expansion reversing engines are stopped the steam between the main valve and the piston goes on working until an equilibrium before and behind the piston has been attained. The consumption of steam resulting from this has always been considered a particular drawback of the reversing engine. In the English reversing tandem engine this drawback appeared in a striking form, because not alone the fresh steam but also the steam between the high pressure cylinder and the receiver works on after cutting off steam, and thus forces the engine to make a number of revolutions uselessly. When the operation of reversing begins and fresh steam is admitted only the two high pressure cylinders come into play. Now for heavy rolling mill work that does not suffice, and it is necessary to admit fresh steam into the receiver. At the first glance it seems as though this drawback might be avoided by placing the link in its middle position and not by cutting off the supply of steam. It is true that in this way a rapid stoppage can be attained and that the steam may be retained in the receiver so that it is available in reversing. Unfortunately, this method is not applicable, because it is not possible after the reversing to start slowly, because as soon as the reversing gear has been

changed the engine starts with full power, and in that way the steam held back is not alone lost but it is also made impossible to do correct rolling by slow starting and rapid subsequent work. Probably these older engines have had the very heavy reciprocating masses which do not admit of the very high speeds necessary for rolling long pieces. These causes for defective reversing have a good deal to do with the partial ill success in regard to steam economy.

In the beginning of my paper I have referred to the four principal advantages of expansion engines, and the system now under consideration must be decided on that basis. The utilization of high degrees of expansion is only possible to a limited extent because the engine after every pass works only as an ordinary double cylinder engine with both high pressure cylinders. It is only after one or a number of revolutions that there is in the receiver a pressure high enough to allow of expansion. In the first passes, however, the piece has already passed the rolls. When the receiver and at the same time the back portions of the high pressure cylinder are filled with fresh steam then that part of the work is lost which this fresh steam might have performed in the high pressure cylinder.

The lessening in the fall of temperature in the cylinders is only adequately attained even with fly wheel engines. That such must be the case is clear because whenever the engine stops its temperature falls to the low degree of the exhaust steam. Then fresh hot steam entering during the first revolutions meets even with more unfavorable temperature conditions than is the case in the ordinary single cylinder rolling mill engine, because the cylinder surfaces exposed are very much greater. This is true even when reversing is attained by means of the link, because at once after stopping the engine is emptied. The advantage expected is not attained at least during the first few passes. On the contrary, there is a distinct disadvantage. It is certain, however, that the losses of steam due to leakage are lessened. The effect of condensation is also better than in single cylinder reversing engines, because the steam leaves the low pressure cylinder at a lower final pressure. These points apply to ordinary tandem reversing engines even when all the details have been perfectly worked out. The English tandem engines suffered from faulty details and from the large quantities of water required by their condensing plants, thus wasting power. If the final result was, in spite of this, that the poorly designed old tandem engine, with its wasteful condensation, used less steam than a new triple engine without condensation, then this offers a proof for the excellence of the principle of compounding.

### The Ocean Going Torpedo Boat "Stringham."

The "Stringham," the largest and costliest torpedo boat yet built for the United States navy, will be launched from the yards of the Harlan & Hollingsworth Company, Wilmington, Del., next Saturday. She will be the pioneer ocean going vessel of her class and her guaranteed maintained speed will be 30 knots. The "Stringham's" keel was laid on March 21, 1898. Her length is 225 feet; breadth, 22 feet; mean draft, 6 feet 6 inches, and displacement, 340 tons. This is 70 tons larger than the "Farragut," twice as great as any other American torpedo boat built or building, and is within 60 tons of the weight of some of the destroyers. Two vertical triple expansion engines driving twin screws will develop 7200 horse-power when forcing the boat at her maximum velocity. This power is greater by 1500 than that of the "Farragut" or any of her class and equals that of several destroyers. It is nearly as great as the horse-power of the cruisers "Newark" and "Philadelphia," which are over 4000 tons displacement; is much greater than that of the "Detroit" and the "Montgomery," 2000-ton ships, and nearly twice as great as that of the "Atlanta" and the "Boston." The normal coal supply is 35 tons, but the bunker capacity of the "Stringham" is 120 tons, and with this she will cruise straightaway over 1000 knots. The "Stringham" will carry two 18-inch Whitehead torpedo tubes and seven 6-pounder semi-automatic guns. Her crew will consist of four officers and 28 men.

At a recent convention of the Amalgamated Association in Detroit, Mich., a committee was appointed to draw up a scale fixing wages for axle workers. Two lodges have recently been organized consisting of axle makers.

Blast furnace employees in the Mahoning Valley have made a demand for increased wages to take effect June 5. They ask that the same wages be paid them as are paid in the New Castle district in the Shenango Valley, which are: Keepers, \$2.50; top fillers, \$2.25; turnmen, \$2; laborers, \$1.50.

## Canadian News.

### Iron and Steel Bounties to Go.

TORONTO, June 8, 1899.—Mr. Fielding, Finance Minister in the Dominion Government, has given notice of a resolution providing for the gradual reduction of the bounties on pig iron, puddled bars and pig iron manufactured in Canada. Under the proposed arrangement the last of the bounty law will vanish from the statute book on June 30, 1907. The period of five years, during which the Bounties act of 1897 has to run, expires on April 23, 1902. After that date the dwindling process proposed by Mr. Fielding will begin and go on as follows:

From April 23, 1902, until June 30, 1903, the bounties will be 90 per cent. of what they are now.

From June 30, 1903, to June 30, 1904, they will be 75 per cent.

From June 30, 1904, to June 30, 1905, they will be 55 per cent.

From June 30, 1905, to June 30, 1906, they will be 35 per cent.

From June 30, 1906, to June 30, 1907, they will be 20 per cent.

After the last named date they will cease completely.

Furthermore, it is only on pig iron and puddled bar that these diminishing bounties will be paid. On steel ingots no bounty will be paid after April 23, 1902. Until that date the bounties are as follows:

On steel ingots manufactured from ingredients of which not less than 50 per cent. in weight consists of pig iron made in Canada, \$3 per ton.

On puddled iron bars made from pig iron produced in Canada, \$3 per ton.

On pig iron, \$3 per ton upon the proportion produced from Canadian ore and \$2 per ton upon the proportion produced from foreign ore.

The plan of gradually wiping out these bounties has so far not called forth expressions of disapproval from the iron and steel interests. S. F. McKinnon, Toronto, one of the directors of the Hamilton Blast Furnace Company, was interviewed upon the subject on Thursday. He considers that if the iron and steel industry is not firmly established in Canada before the end of the period which Mr. Fielding has fixed for the bounties it will never be established. He perceives that the arrangement will have a deterrent effect upon new iron and steel enterprises, but as he is in a well established one no one can expect him to be dissatisfied with that result. He came out very strongly in opposition to the proposal to start a furnace in Toronto. That projected enterprise, however, will not be stopped by Mr. Fielding's new arrangement. So, at all events, certain of those supposed to be closely identified with it say.

Speaking at Ottawa on the 1st inst. a prominent Nova Scotian interested in the iron and steel industry says:

"Mr. Fielding's proposition of a gradual reduction of the iron and steel bounties after 1903 is not the blow at the Nova Scotian iron industry which at first blush might be supposed." He went on to say that what the Whitney syndicate wanted as a preliminary to the erection of its \$6,000,000 plant in Cape Breton was a definite declaration of policy from the Government. This has been made in the resolutions of the Finance Minister. It was uncertainty as to the Government's policy which deterred enterprise. Now the Whitney syndicate can proceed with the assurance of at least two years' enjoyment of the full bounty, and after that, according to the calculations of the promoters, it will be able to export pig iron to Europe without any bounty whatever. In the opinion of the Nova Scotia public man quoted it will be the Ontario iron producers, not those of Nova Scotia, who will feel the loss of the bounties.

### A New Nickel Project.

Dr. Mohr of London, England, was in Toronto a few days this week. He has just returned to Sudbury, in the neighborhood of which he has spent considerable time since coming into the country some months ago. He is associated with Dr. Ludwig Mond of London, who is well known as a refiner, and is reported to be a man of very large wealth. Dr. Mohr's present visit to Canada is for the purpose of looking into the nickel deposits about Sudbury. He has looked over a large tract of territory in Denison township and other parts of the district, where Dr. Mond and his associates have options. For some time a diamond drill has been employed in testing the properties, and about 50 men have been at work sinking shafts and otherwise exploring the deposits. As a result of these examinations Dr. Mohr thinks there is a strong probability that several properties will be taken over by Dr. Mond's company. In that case mining operations would begin in about two months, and reduction works would be established as soon as possible afterward. But the plans of Dr. Mohr's principals do not contemplate refining in Canada, though the statement has been made more than once that they do. It is proposed to turn the ore into matte and ship that to England. But the matte will contain about



80 per cent. of metal, or much more than the matte of the Canadian Copper Company. This being so, an export duty on nickel matte would not be more agreeable to Dr. Mond's company than to the Canadian Copper Company. In fact it is hinted that the export duty on matte would put an end to the project.

The last indications to be noted do not point, however, to an export duty. These are to be found in the speech of Sir Wilfrid Laurier in the House of Commons on the 27th ult. in reply to Sir Charles Tupper's proposal that such an impost be adopted. Sir Wilfrid said: "I do not believe that either in the future or in the past any policy of retaliation toward the United States would have any effect, or will have any effect, in settling our difficulties with them. I am quite as much in earnest as Sir Charles Tupper himself in this respect, that we must stand upon our rights and upon our dignity, but standing upon our rights and upon our dignity does not call upon us to enter upon a policy of hostility to the United States."

#### For Steel Rail Mills.

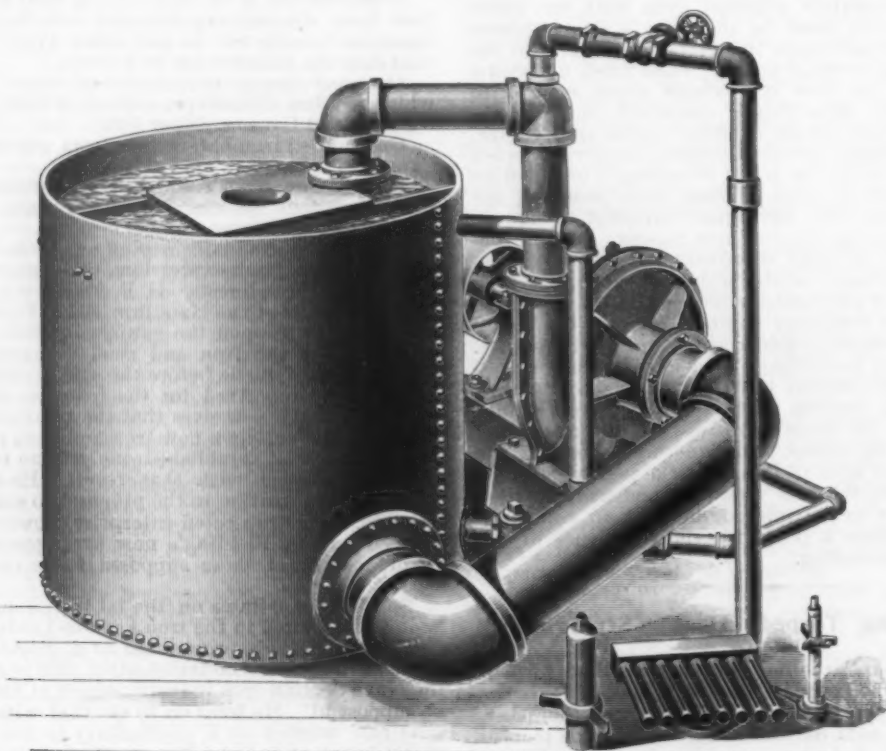
A large deputation from New Ontario, especially from Rainy River district, is to visit Ottawa and lay before the Government recommendations in the interest of that

Ont., at \$22,905, and that the contract for the water wheels be given to the Jenckes Machine Company, Sherbrooke, Quebec, at \$6800.  
C. A. C. J.

#### The Sponsel Hardening Apparatus.

The Sponsel hardening apparatus built by the Whiting Mfg. Company of Hartford, Conn., is so designed as to cool the work rapidly and uniformly and to positively prevent the formation of steam pockets about all or any portion of the pieces to be hardened. Work having an irregular contour and formed with deep recesses and sharp projections can be as securely hardened all over as work having only plain surfaces. The device is, therefore, peculiarly adapted for hardening the interior of rings, rolls, &c.; dies having flat surfaces such as drop dies, cutting and embossing dies, and all cylindrical pieces, such as rolls, arbors, milling cutters, taps, reamers, &c.

The film of steam formed upon a red hot piece of steel immersed in water prevents the rapid dissipation of heat and may so influence the cooling as to produce irregular hardening. This is particularly liable to occur in pieces formed with pockets, from which the steam cannot escape



THE SPONSEL HARDENING APPARATUS.

country. One of these recommendations is that an iron policy be devised for the next ten years, the main object of which is to be the establishment in Canada of mills for the manufacture of steel rails. As a means of bringing this about it is suggested from Port Arthur that an act be passed requiring that after two years from the date of its passage all rails laid in Canada on lines subsidized by the Government must be of Canadian manufacture. It is further suggested that the policy of the Ontario Government be adopted and that a federal law be passed enabling the Dominion Government to give Canadian steel rails in lieu of cash for subsidies.

The whole Legislature of Ontario has been invited to take a trip through the Rainy River district at the expense of the towns of Sault Ste. Marie, Port Arthur, Fort William, Fort Frances and Rat Portage. The excursion is expected to start on the 15th inst. and to last two weeks.

#### Trade Items.

A committee of the I. M. U. waited on W. H. Frost of the Malleable Iron Works at Smith's Falls, Ont., and asked for an advance of 15 per cent. in the wages paid to his hands. He at once more than complied, raising the wages in every case at least 15 per cent. and in some cases 30 per cent.

The special committee of the Ottawa City Council appointed to examine the tenders for civic plant have recommended that the contract for the 8,000,000 gallon pump be awarded to the Kerr Engine Company of Walkerville,

readily and quickly. The results may be distortion and sometimes rupture. The ordinary blacksmith shows that he appreciates quick cooling by keeping the article moving in the water. These difficulties are all removed by the Sponsel apparatus. The water is directed against the article in such volume and in such a direction as to effectually remove the steam film and to constantly subject the metal to the action of a cold liquid. By this method the temperature is reduced as rapidly as possible and all danger of uneven hardening is entirely removed. An important advantage of this process is that the metal may be hardened at a much lower heat, thereby obviating loss by cracking, also securing deeper penetration and harder and better wearing surfaces.

The machine illustrated will take work up to 6 inches diameter, 18 inches long. The tank is 4 feet in diameter by 4 feet in height. It is provided with an overflow and an outlet, Fig. 4, through which all of the liquid in the tank may be emptied at any time by simply opening a valve. A connection can be made with the city water supply so that the tank can be filled with fresh water when required. When the apparatus is used continuously any amount of water may be constantly flowing through the tank, so that the temperature may be controlled to any required degree. It is also evident that any special hardening solution may be used in place of water.

Water is forced by the pump A through the pipe B to the fixture D in the center of the tank. This consists of a series of tubes arranged in a circle about a platform



upon which the article is placed. The inner side of each tube is formed with a longitudinal slit, through which the water is forced against the article. As will be seen by the small arrows in the plan, Fig. 2, these slits are so arranged as to direct the water tangentially against the article, thereby providing the greatest cooling effect. Provision is also made for the rapid removal of the water after it has done its work. The pipe E, Figs. 2 and 3, is

### Lake Superior Iron News.

DULUTH, June 3, 1899.—The Mountain Iron mine of the Oliver Company, Mesaba range, is having constructed by the Barnharts an 85-ton shovel that is expected to do the most powerful work of any shovel on the ranges. The mine has now two shovels in ore and two in stripping,

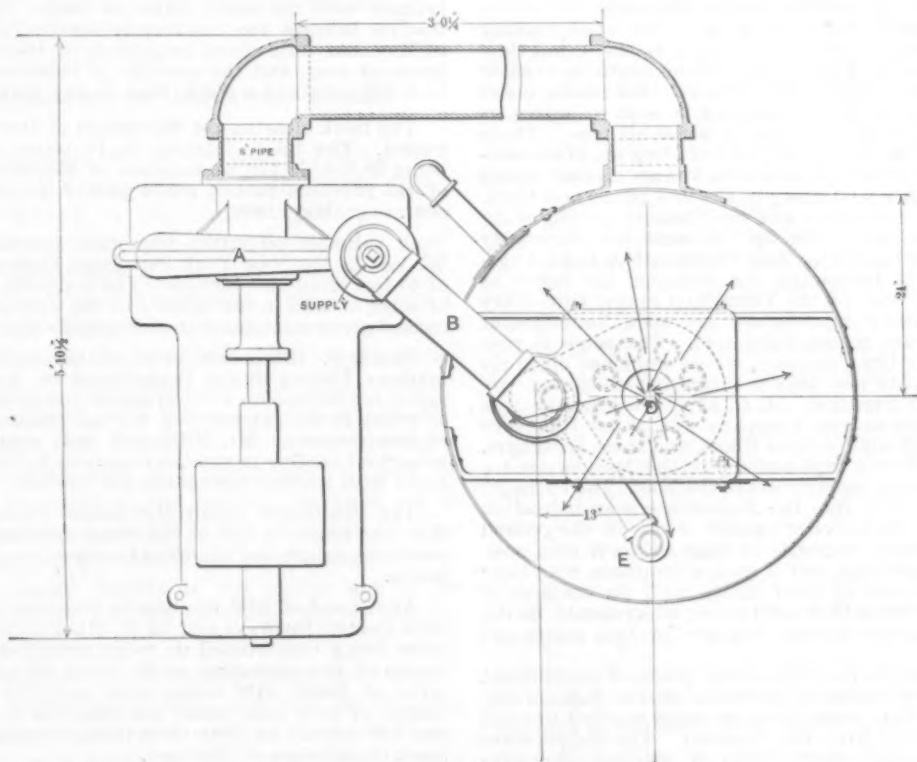


Fig. 2.—Plan.

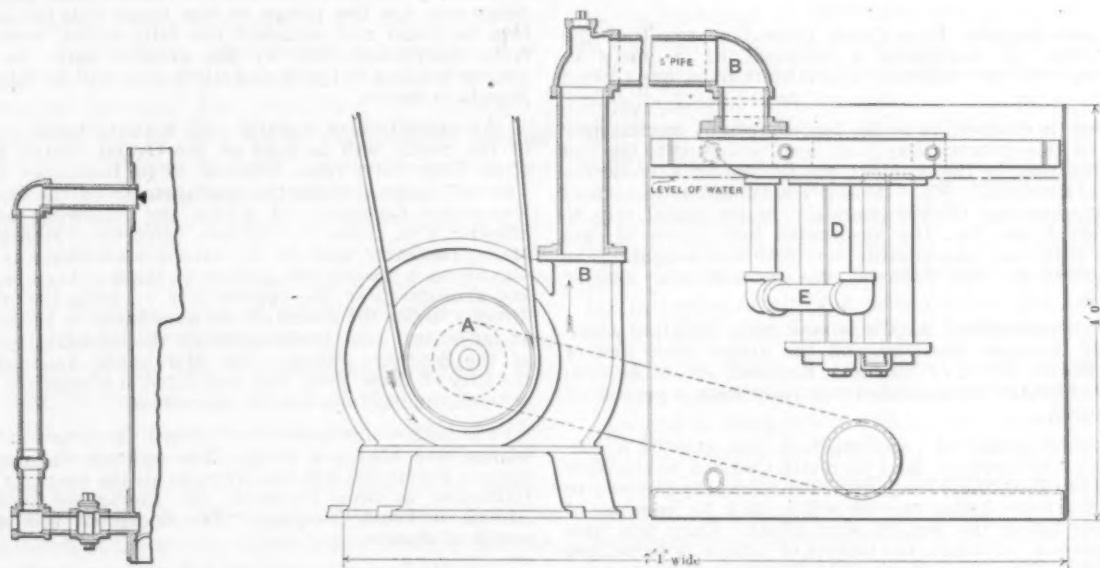


Fig. 3.—Vertical Sectional Elevation.

Fig. 4.—Emptying and Overflow Pipes.

### THE SPONSEL HARDENING APPARATUS.

intended for attachments for hardening special shapes. Some of these attachments are shown on the floor in Fig. 1. It is apparent that the apparatus can be modified to meet any conditions and that the work it performs is reliable in the highest degree.

The sales agents of the various anthracite mining companies at their meeting last week decided to hold prices during June and advance them 25 cents on July 1 and 25 cents on September 1, also to restrict mining operations to two days one week and three days the next week.

and is sending out 6000 tons a day. Some 400 men are employed in all operations. This mine has now reached the third level or cut and is below the water level, but none of the dire calamities predicted for Mesaba steam shovel mines when they reached water level have come to pass. This third bench has an area of some 500 x 800 feet, and cars are brought in and moved about in continuous trains past the loading shovels, so as to allow no delay. The mine will be shipping some 7000 tons a day as soon as its new shovel is working and is supplied with cars.

The Franklin mine, now the property of the new Re-

public Iron & Steel Company, is still working slowly, but will probably put on a large force soon. It is somewhat surprising that this company, in common with others of the new amalgamations, do not secure larger ore supplies while there is yet time and while properties can be had for exploration at a song. These supplies are still to be had in plenty, though they cannot be had at old prices, but they are being steadily picked up, not by the new concerns whose supplies of raw material would seem very limited, but by the older and stronger companies that have already the greatest reserves in existence.

Mr. Oliver and his allies have given the steel making world a good many pointers as to one's reserves, but they seem inclined to stand aside and let him continue to show them the way to get ore. The general idea among many of these steel men is, I find, that ore is now so scarce as to be out of the way; but this is not at all true. There would probably be no difficulty in rounding up, after careful exploration, groups of mines in Minnesota that would compare favorably with many of the best mines now open. Not all the new companies and steel makers are idly waiting to see what may turn up, for some are vigorously prosecuting development. The Pittsburgh & Lake Angeline Company of Ishpeming, for instance, are busily at work on a large tract on the Vermillion range, with every prospect of making a mine, and are open for offers of other lands in that region I am told. The same is true of the Mahoning Ore Company, whose immense openings on the Mesaba do not satisfy them; but they, too, are exploring the Vermillion. A. C. Ely, whose connection with the Minnesota Iron Company was at one time very close, is also exploring several tracts, and there are others. The Jones-Kimberley explorations on the Mesaba are for certain manufacturing interests in the East. The entrance of the Federal Steel into the Menominee is an indication of what one of the heaviest owners of ore in the ground thinks of the future necessity of making their own position secure for all time, and if such a company, who have one mine alone out of their many with an ore area of 40,000,000 tons, think they need more, what should be the position of concerns having but one or two mines and those not large?

I have within the past week seen pieces of magnificent ore, not apparently greatly dissimilar to the famous Republic Special, that came from an easily reached district where now there is little development. The finders state that there are large outcroppings of this and other ores there.

W.

## THE WEEK.

A press dispatch from Colon, Colombia, says that the local press is discussing a proposal of a party in Panama who are desirous of annexation to the United States.

What is claimed to be the largest freight engine ever built in this country has just been delivered to the Big Four Railroad by the builders, the Richmond Locomotive Works, Richmond, Va. It is a consolidation ten-wheel engine, weighing 187,500 pounds. On its initial trip to Newport News, Va., the locomotive took down 53 cars loaded with coal, aggregating over 3000 tons weight. The Chesapeake & Ohio Railroad has ordered nine similar engines.

It is rumored that the Clydebank Ship Building Company of Glasgow, Scotland, and the armor plate firm of John Brown & Co. of Sheffield, England, are to be consolidated into an incorporated company with a capital of \$15,000,000.

The city council of Camden, N. J., has granted a concession of 100 acres of land in South Camden to the New York Ship Building Company. The company purpose to construct four docks, one of which will be capable of accommodating the largest ship afloat. They will also erect several buildings, the largest of which is to be 1400 feet long. The New York Ship Building Company are capitalized at \$3,000,000.

The general strike at the Great Creusot Iron Works in France, which began two weeks ago, terminated on Saturday in a complete victory for the strikers, the company having consented to grant the increase in wages asked for, to reinstate the strikers and to pay them for the time during which they were idle because of the strike.

The Shawinigan Water & Power Company of Montreal, Canada, are about to erect a large electric power plant of about 100,000 horse-power to be located at the Shawinigan Falls about 17 miles below Three Rivers.

According to *Dun's Review* the total of business failures in the month of May was the smallest ever known, the liabilities being \$2,000,000 less than those of April, which showed the smallest total up to that time. The total of liabilities of failed concerns last month was only \$3,820,000, as compared with \$11,139,000 in May, 1898, and

\$11,319,000 in May, 1897. Moreover, nearly every branch of business shared in the improvement, all the largest interests showing the smallest aggregate of failures ever reported. The number of manufacturing failures was smaller than ever before in May, the average of liabilities per failure little over half those of any other year, and the amount not only smaller than in any other May, but smaller than in any other month of the entire period for which monthly records exist, only \$1,322,466, last January, with \$2,209,568, being the only other month in which failures were not about twice as large. The number of trading failures was not merely the smallest ever known in May, but only about two-thirds of the number in any previous year, and the average of liabilities was smaller by \$1100, or about a sixth, than in any previous year.

The bank clearings of the month of May made another record. The total clearings in 82 cities are reported as being \$8,313,375,478, an increase of \$50,000,000 over those of the previous month and a gain of no less than 56 per cent. over May, 1898.

A valuable oil strike was made recently at Belmont, W. Va., by the New York Petroleum Company, at a depth of 65 feet from the surface. The company own hundreds of acres of land in the vicinity of the well and the find has caused great excitement in the neighborhood.

Frank S. Hitchcock, chief of the section of foreign markets, United States Department of Agriculture, has sailed for Europe on a Government commission, the object of which is the extension of the agricultural export trade of this country. Mr. Hitchcock will visit a number of important centers in various countries for personal conferences with leading merchants and officials.

The Cincinnati Retail Merchants' Protective Association has issued a call to the retail merchants of Ohio to meet this month in Columbus to organize a league to fight trusts.

At the end of 1898, 68 cities in Germany were equipped with electric railways and in 35 other cities electric lines were being constructed or were provided for, the total length of the operating roads being 888 miles, with 1205 miles of track, 3190 motor cars and 2128 trailers. The length of new line under construction or contracted for was 890 miles. In 1891 only three German cities could boast of railways of this type.

Paper money cannot be used in the Philippines on account of the omnivorous white ant which infests the islands and which is particularly partial to paper. In a recent shipment of \$1,000,000 of United States paper currency sent for the troops it was found that the ants got into the boxes and attacked the bills, which were saved from destruction only by the greatest care. In consequence nothing but gold and silver coin will be shipped to Manila in future.

An exposition of natural and manufactured products of the South will be held at the Grand Central Palace, New York City, from October 25 to December 1 next. The enterprise is under the management of the Southern Exposition Company, of which the following are the officers: Col. John J. Garnett, director; Montgomery Maze, treasurer, and B. E. Greene, secretary. It is designed as a means for giving to the Southern producer and manufacturer the opportunity to bring his products directly under the notice of the merchants of the country at large, and also to demonstrate the industrial progress of the Southern States. The Merchants' Association of the City of New York has appointed a committee to act with the management of the exposition.

The largest mortgage ever placed on record in Washington was filed last week. The amount the mortgage secures is \$240,000 000, and it covers all the property of the Baltimore & Ohio Railroad, the mortgagee being the American Trust Company. The document bore \$60,000 worth of stamps.

Reports from manufacturers of wagons, carriages and pleasure vehicles throughout the country indicate that business in their line is better than in ten years past. The demand for wheeled conveyances is so great that while the factories are pushed to their fullest capacity there is hard work to keep abreast of orders.

A Paris cable dispatch states that the authorities have granted 7250 extra feet of space to the United States at the exposition of 1900—namely, 4000 feet for an army and navy exhibit, 1250 feet for horticulture and 2000 feet for other purposes.

The American Tin Plate Company have ordered four very large pickling cradles for the Humbert works at South Connellsville, Pa., from the Falcon Bronze Company, Niles, Ohio. The cradles are of a new design and measure 5 feet square and 4 feet in depth. The Falcon Company have also in hand several large orders for castings for the American Tin Plate Company.



# The Iron Age.

New York, Thursday, June 8, 1899.

DAVID WILLIAMS COMPANY,	- - - - -	PUBLISHERS.
CHARLES KIRCHHOFF,	- - - - -	EDITOR.
GEO. W. COPE,	- - - - -	ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS,	- - - - -	HARDWARE EDITOR.
JOHN S. KING,	- - - - -	BUSINESS MANAGER.

## The Speculation in Industrial Stocks.

Undue importance is apt to be attached to the connection between the consolidation of industrial interests—now following in the United States a course already familiar in Europe—and speculation in company shares. Doubtless if the chief purpose of consolidation in any line of industry were to afford a chance to profit through manipulation of stocks, a collapse would be only a matter of time, bringing loss to every investor. But it does not necessarily follow, from the "listing" of a company's shares on the Stock Exchange, that the object of their directors is speculation rather than the production or sale of goods. The securities of the leading railways are so listed, but the men in charge hold their places because of proved capacity to conduct the transportation business for the mutual benefit of the public and of the shareholders. The trading in their shares on the Stock Exchange is partly for investment and partly speculative—just as would happen in private transactions if no exchange existed, and just as happens every day in real estate and merchandise. Intrinsicly it is not more wrong to buy or sell a certificate of corporation stock than to buy a lot of hardware to be sold again, and if it is right to trade in such certificates anywhere, it is no less so on the Stock Exchange, which exists only because of a demand for just such a convenience. The exchange has been condemned as affording a means for "making prices" for stocks through the circulation of unfounded rumors, but this is only an incident in stock trading that will take care of itself when the public has learned to invest with more discrimination.

Railway securities have been referred to, because they formed the bulk of the stocks "traded in" here long after the so-called industrials began to figure on European bourses. But a notable change has occurred. Of the 3,000,000 railway and miscellaneous shares sold on the New York Exchange recently, 62½ per cent. in number—or shares of the par value of \$191,373,500—represented other than steam railway corporations. The trading in a single "industrial" reached 377,000 shares during the week, being marked by a wide range in prices. It is in these securities that much of the purely speculative trading is done, since their merit as dividend earners is yet to be tested. They are bought either with the idea that, by shrewd manipulation, they can be "unloaded" at an advance, or else on account of the encouragement held out of a high rate of dividends. The securities of some of the important railways have ceased to figure in the speculative list, because they are practically certain to declare dividends at a fixed interval and rate.

The speculative stocks will cease to be such only when their dividend earning capacity has become thoroughly fixed. The measure by which the new industrial combinations will stand or fall, however, is not the price of their securities in the public market. The sale of commodities at a price which yields a

profit, but which is lower than the price of any competitor, offers a chance for a long life for any corporation, with results satisfactory to the shareholders, regardless of what the public or professional speculators may pay for its shares. On the other hand, a corporation, however great, which can be undersold by even a small competitor, stands in a dangerous position, which is not improved by any possible quotations for the shares sent over the "ticker." Fears have been expressed lest a financial panic should result from an overloading of the market with "trust" securities. While this would be possible, there seems to be no reason for being disturbed about the matter now. Already the leading financial houses are more cautious about joining underwriting syndicates than when the consolidation of industrial interests on a large scale was first begun; not because of any change of views with regard to the principle of consolidation, but because of the possibility of overdoing the thing. And yet the financial assistance needed in the consolidation of a really good industry, on a safe basis, doubtless could be secured as easily to-day as at any time in the past.

Many of the so called "trusts," the incorporation of which is reported from time to time, never take actual shape. Or, such a company may begin business without the issue of shares to the full extent authorized in its charter. Again, it is usual, in bringing about a combination, to distribute the issue of stock among the owners of the various properties brought together with a certain amount to the promoters. In such cases there is really no change of ownership. The shares of such a company may amount to millions of dollars, but listing them on the Stock Exchange does not imply that the public is expected to invest to any such extent. The public may keep its hands off altogether. Taking as an example a recent week no sales were made on the New York Stock Exchange of the shares of a group of dividend paying railways, with an aggregate capital of \$85,000,000. This may have been because none was offered for sale, but at least it shows that the listing of shares and their purchase by the public have no necessary connection. Nor does the public always respond when invited to subscribe to the capital stock of a new corporation. The weakness in the position of Mr. Hooley, the English promoter who lately came to grief, was that neither his alluring prospectuses nor the influence of his high priced titled directors would induce the public to buy the shares of the various companies which he assisted in getting up. Mr. Hooley passed for a wealthy man because his name appeared in connection with so many schemes capitalized for millions, but when the bubble burst it brought little panic or ruin, because the public really had not invested largely. In this country, as in England, exaggerated ideas are afloat as to the amounts invested in many corporations having a large capital—on paper.

The fact is that a good industry, capably managed, with the help of ample capital, is in no danger of being wrecked nowadays by any ordinary happening in the financial world. Its real assets are the same, whether Wall Street quotes its shares at 2½ or 250, and its actual liabilities are no more nor less on account of such quotations. It is not meant, however, that there can be no danger growing out of giving inflated values to industrial properties. For example, the owner of a furnace or mill, on selling it for a large sum in stock certificates, might make a mistake in recasting his affairs on the basis of having actual



wealth in his possession to the par value of his shares. But many such cases of embarrassment could occur separately without bringing on anything like a financial panic.

The capacity of this country to supply capital for new enterprises has become very great and is growing. The enormous value of our exports last year in excess of our imports no doubt represented a large absorption at home of American securities formerly held abroad. There are great business concerns making more money than can be invested profitably in their own line, and this seeks investment in outside ventures. The funds of insurance companies, trust companies and the like, all the time increasing in amount, call for the higher grade of investment securities, which releases the money hitherto invested in these, to be devoted to the new classes of stocks, which promise a higher rate of return. Recent changes in the New York savings banks law have opened the way to the investment of their funds to a large extent in railway bonds. Perhaps the law will yet permit such funds to be invested in the better class of industrial securities; but the latter must first pass through a long season of probation. In the meantime it will be hardly worth while to predict a financial panic every time the course of progress receives a check. Panics are the result of excessive general indebtedness, coupled with loss of confidence on the part of the creditor class that the debts will be paid. But it doesn't create any debt to have a company incorporated with \$50,000,000 capital authorized, with \$10,000,000 shares actually issued and in the hands of the late owners of the property now controlled by the new corporation, whether or not the \$10,000,000 is "listed" on the Stock Exchange. There is a wide difference between such a situation and the saddling of another \$50,000,000 worth of stocks upon the investing public.

#### Paper Money and Gold Exports.

Mexico is about to refund its national debts, partly in this country, but mostly in Europe. How much gold this will call for is difficult to conjecture. The amount may not be great. But Japan is about to borrow \$50,000,000 in London, and Russia is trying to get \$15,000,000 there, and India is likely at almost any time to adopt the gold standard, in which event the Indian Government will probably borrow a considerable sum of gold for the purpose of redeeming rupees or paper, as the United States borrowed close to \$100,000,000 in order to accomplish the resumption of specie payments. There is an exceptionally large sum of gold in this country, close to a billion dollars, and it is not unlikely that Europe may offer a good enough price for gold to draw it from this country, though the merchandise balance of trade is still heavily in our favor. The recent shipment of \$1,000,000 of gold, however, does not seem to be the beginning of such a movement, because at present rates of exchange there was no profit in the shipment, and it must be attributed to some special considerations or transactions of the shipper.

As the amount of gold in this country is very large, and as there is a decided preference for paper circulation, it might appear that the export of gold was a matter of trifling interest to us. It certainly is not a serious matter; it might be followed by several shipments without deserving to be treated as a serious thing. And yet it is true that this export of a million

dollars has been carefully scrutinized and discussed from every point of view. Money is abundant; with a greater demand it could be more abundant, for there is still probably a large amount of money in Europe due to the United States in settlement of trade balances. But a considerable export of gold would make it more difficult and more expensive to borrow, and therefore limit the means of buying and carrying stocks. It has even been suggested that persons interested in depressing prices had arranged for this export of \$1,000,000.

To the extent that our circulation is paper European demands for gold can be responded to without inconvenience here, and therefore it may seem that the presence of the paper is an advantage. In a qualified sense this is true. But for the proper performance of its functions as money by paper it is necessary that there should be an ample volume of gold not only in the country, but in the Treasury, to maintain its redeemability and to prevent even a suspicion that this might at any time be endangered. Therefore, while the country uses paper as far as possible for reasons of economy and convenience, it needs gold both as money and as the means by which the paper can continue to serve as money. If we have a volume of paper so large that gold can go abroad without causing any tightness in the money market here, it is at first sight a decided advantage. But the disadvantage is that if the gold can slip away without being observed in the money market, a great deal more than we can well spare, with a regard for the safety of the paper, may get out of the country.

This is precisely what happened in 1891 and 1892. The manufacture of paper money—Sherman notes—under the law of July, 1890, did not directly force gold out of the country. But Europe needed money, and as fast as paper money was printed by the Government we could send gold to Europe without creating any stringency. The amount of Sherman notes manufactured and the amount of gold sent to Europe in a couple of years were nearly the same. In the early part of 1893 the business community woke up to the fact that so much gold had gone, so much had been taken from the Treasury vaults, that the continuance of the process was uncertain, and the panic ensued. A few months later gold came back to this country, not because of a change in the course of trade, but because money was hoarded here and because the supply in the money market was so small that its rental value was high, and it paid better to employ money in New York than in European money markets.

We cannot make ourselves independent of the money markets of the world, and it is better that we should feel the stringency due to the export of gold early than that we should go on for two or three years in apparent ignorance of it and then feel the accumulated effect at once. In so far as our paper currency makes us insensible to the currents which carry real money, gold, wherever it is most in demand, it is an element of danger, and an increase of a local currency is favorable to the export of a universal currency.

Allusion was made in our last issue to the reforms in making bar iron contracts now being inaugurated in the Western bar iron trade. The steel manufacturers are following the example thus set, their sales agents having been quite generally instructed the past week to make contracts for definite quantities only, with terms of payment net cash in 30 days.

### The Annual Farm Implement Contracts.

The time is now at hand when implement manufacturers place their annual contracts for iron and steel. Their business is of such a character that it is desirable for them to cover a large part of their requirements far ahead of their actual necessities. They cannot afford to run short of materials in the light of their manufacturing season. While the demand for implements involves some uncertainty, yet the selling period is so short that it is better to have a little overstock than to find their customers clamoring for more than can be supplied. Hence it has been usual for many years to place contracts for practically everything that might be required in preparing for the selling period. Prices are now so much higher than the implement makers have been accustomed to paying that they naturally hesitate to make engagements at ruling rates for so long a time as nine to twelve months, and they are seeking all the light they can get as to the probable course of the iron trade in the immediate future. The further they prosecute their investigations the less likely are they to find good reasons for expecting an early decline in prices. No matter to what branch of the iron trade they may turn they are confronted with the strongest evidences of the demand outrunning the supply. From the crudest of raw materials to the most highly finished products the representations of manufacturers agree as to the shortage in the supply, varying only in the reports of the strength of the demand according to the character of the product. In some lines the shortage is much more pronounced than in others. When it is found that in some branches of the iron trade orders are being placed with manufacturers to be delivered at their convenience, and that the price made on such a contract is practically an option sold, they will realize the great change that has occurred and the apparent futility of expecting a reaction from present conditions in time to enable them to buy their material cheaper for the coming season's output of implements.

The change that has taken place in the iron trade seems almost past comprehension. But a few months since it appeared impossible to work up to a higher range of values. The belief was general that a permanently low level of prices had been established and that the days of booms had passed forever. Everything had been adjusted to low costs. The course of trade in 1898 strengthened the conviction that cheap iron had come to stay. The demand was then exceedingly heavy, and works were being crowded to their capacity to keep consumers satisfied; yet prices continued low. The seller was at the mercy of the buyer almost as much as when business was suffering from the depths of depression. The implement manufacturers were able to make contracts on extremely favorable terms, almost if not quite as low as in any previous year. But now a totally different condition is found. Not only this country, but the world at large is short of iron, with no prospect of early relief. With our resources taxed to the utmost to supply the needs of our own people, other countries are endeavoring to draw from us to supply their urgent necessities. From present indications a few weeks will see every pound of iron and steel that can be turned out in this country in the last six months of this year under contract to buyers. With such a condition as absolutely assured as anything earthly can be, the consumer who does not cover his requirements while he can is taking the risk of being able ere long to secure but a small part of what he wants. We seem to be passing be-

yond the question of price. The more important question looming up is, where are more iron and steel to be obtained?

### The Automobile Industry.

A promising new industry is the manufacture of automobile vehicles. It has taken considerable time for the development of the business in this country, notwithstanding the fact that apparently successful machines were turned out years since. As usual, however, much educational work has had to be done in teaching the public the practicability of a complete departure from old methods. The rapid progress made abroad has greatly assisted in the growth of a demand for automobiles here, and evidence is accumulating of the readiness of the people to accept the revolution in vehicular propulsion. Not only have large contracts been placed by companies organized to transport passengers in the leading cities, but individuals are making purchases for their private use. One of the largest vehicle manufacturers in the country will shortly add a special department for the construction of automobiles, finding the demand for them requiring facilities beyond those offered by the existing plant, extensive as it is. Bicycle manufacturers have in notable instances added the construction of such carriages to their regular product, and are greatly encouraged by the enlarging market opening before them. Some of the machines most recently perfected will not be built in specially constructed factories, but the parts will be contracted for with manufacturers having facilities for their production, the assembling to be done at some one point. In this way the public will be furnished with such automobiles much more rapidly than if a factory had first to be built and equipped and a working force organized and trained. This is more especially the case with machines propelled by gasoline motors. The manufacture of the motors, of the wheels and of the bodies can be conducted to advantage in establishments well fitted for their immediate production. The equipment of a factory to make all under one management would require much time. The demand promises to be so heavy that time is an important consideration with those who are aiming to supply the trade.

**The Milwaukee Foundrymen.**—The foundrymen of Milwaukee, Wis., and vicinity have formed an association under the name of the Milwaukee Foundrymen's Association, holding weekly meetings on Monday evening. C. A. Sercomb is president; F. L. Neacy, vice-president; Thomas W. Sheriffs, secretary, and E. K. Rundle, treasurer. Their object is to promote a more friendly feeling among the foundrymen of that locality and thus to bring about uniform customs and mutual improvement. While they do not propose to touch the question of prices on castings, yet it is readily to be seen that a better acquaintance with one another will undoubtedly correct the disposition in the trade to make prices unduly low. The frequent meetings which they propose to hold will enable them to take united action on practical questions constantly coming up which affect the material interests of their vicinity. The membership already embraces nearly all the foundrymen in Milwaukee and quite a good representation of the trade in Racine. The officers are enthusiastic and experienced and will undoubtedly make the association a local factor of much influence.

The Falcon Bronze Company, brass founders, of Youngstown, Ohio, have received a contract from the American Tin Plate Company for a number of pickling cradles. These cradles are of a design which has been used in several mills of the American Tin Plate Company for a number of years and were built from drawings furnished by that concern.

The Cleveland Axle Mfg. Company of Canton, Ohio, will build a large club house for their employees.



## CORRESPONDENCE.

## Variation in Chemists' Analyses.

To the Editor:—Some of the statements in the article "Pig Iron Analyses," by E. E. Johnson, seen in your issue of May 18, 1899, would lead a reader to think that the variation in analyses of the 20 chemists presented by the writer to the Pittsburgh Foundrymen's Association April, 1898, and published in *The Iron Age* April 21, 1898, was wholly due to the character of the samples sent out and not to the chemists' methods of making analyses. A few may remember the criticisms passed on the results obtained by the writer and how the samples were sent out after the manner of general practice, to learn in a practical way how chemists would agree in different sections of the country in determining the analyses of drillings taken from a piece of pig iron 6 inches long.

The writer has held that the samples he sent out were not responsible for the variation obtained, and while in this he was ably sustained by Dr. R. Moldenke and others at that time, nothing, however, can be more convincing of the accuracy of the writer's claims on this point than a study of Mr. Johnson's own results.

The writer does not understand why Mr. Johnson should give only averages, which hide what we are seeking to discover—viz., the variations likely to occur from different chemists analyzing the same samples.

The following table of comparisons with samples the nearest in the percentage of metalloids to the one presented by Mr. Johnson, so as to give him the advantage of every doubt, does not appear to the writer to exhibit results particularly favorable to Mr. Johnson's specially prepared samples.

Table 1.—Greatest Variation in Analyses on One Sample in Checking Pig Drillings.

	Sil.	Sul.	Phos.	Mang.	C. C.	G. C.	T. C.
Mr. Johnson's variation.....	0.18	0.025	0.028	0.19	0.62	0.82	0.48
Mr. West's variation.....	0.21	0.015	0.061	0.23	0.59	0.17	1.09

The variations shown in the above table, the writer would say, are not due to the character of either samples, but more to the lack of tangible means to detect errors or discern the correctness of results, which unfortunately is contingent to the chemist's profession, and instead of any feeling grieved at the disagreement of results in either Mr. Johnson's or the writer's report, efforts should be directed to improve any or all conditions that may favor obtaining greater uniformity in analyses, and the writer believes that the work of the American Foundrymen's Association Standardizing Bureau is a great stride in this direction.

It has cost Mr. Johnson much labor to compile his results, and all should feel grateful for what he has done, as his article, like the writer's, only goes to show the great need of all laboratories being supplied with reliable standards in order to permit chemists possessing tangible means to correctly check their work. It was the writer's experience with variations in analyses from one sample that brought him to conceive and originate the plan of there being one central agency from which all could secure iron drillings, made from castings (not from pig iron, which is unsuitable material for making standards) that had been standardized by a few of our best chemists, and the sooner all laboratories come in possession of such standards the better it will be for the chemists and all interested in the making and use of pig iron, as with such to check analyses Mr. Johnson could then send out his specially prepared pig drillings with the expectation of receiving results that would not show the great variation seen in his 50 chemists' reports.

THOS. D. WEST.

SHARPSVILLE, PA., June 4, 1899.

## Cost of the Nicaragua Canal.

The State Department has made public an abstract of the report of the Nicaragua Canal Commission, of which Rear Admiral Walker is the head, which will be presented to Congress at the next session. The synopsis of the report sets forth that after mature deliberation the commission has adopted and estimated for the route from Brito to Lake Nicaragua, called the Childs route, and from the lake to Greytown, called the Lull route. This line, leaving Brito, follows the left bank of the Rio Grande to near Bueno Retiro and crosses the western divide to the Valley of the Lajas, which it follows to Lake Nicaragua. Crossing the lake to the head of the San Juan River, it follows the upper river to near Boca San Carlos thence, in excavation, by the left bank of the river to the San Juanillo and across the low country to Greytown, passing to the northward of Lake Silico.

This route requires but a single dam, with regulating works at both ends of the summit level. The surveys have in general revealed better physical conditions than were hitherto supposed to exist. To determine the proper unit prices for excavation, the average of prices actually paid to

contractors on the Chicago drainage canal, which represent cost of plant, prices paid for work done and contractors' profits, were taken. To these prices certain percentages were added for the difference in location, climate, &c.

In obtaining the estimates for the cost of locks the prices actually paid for building the Government locks at Sault Ste. Marie were taken, and 33 per cent. was added for the difference of location. The commission believes that a canal can be built across the isthmus on this route for not exceeding \$118,113,790. Col. Peter C. Haines of Baltimore, Md., concurs generally with the views of the other members of the commission, but his estimate of the cost is \$134,818,308.

## OBITUARY.

THOMAS F. MASON.

Thomas Fales Mason, one of the oldest copper miners of the country, died on June 2 at his residence in New York City, aged 84 years. He was born at Swansea, Mass., and after experience in various lines of business connected himself in 1848 with copper mining interests in Michigan. At that time, in connection with two friends, Mr. Mason purchased a tract of land in Ontonagon County, Mich., and developed the Minnesota mine. Later he bought and developed the Quincy mine, which is still highly productive. Since 1860 he was president of the Quincy Mining Company. He was also president of the Rhode Island & Adventure Copper Mining Company and had other large mining interests in the Lake Superior region and on the Pacific Coast.

FRANK N. WINNE.

Frank N. Winne, manager of the railroad department of the Crane Company of Chicago, died May 29 at his home in Evanston, Ill., of pneumonia, aged 41 years.

FRANK THOMSON.

Frank Thomson, president of the Pennsylvania Railroad Company, expired suddenly on June 5 at his home at Merion, Pa., after a brief illness from acute indigestion. Mr. Thomson had returned sick after a week's trip of inspection over the lines of the Pennsylvania road, but a fatal termination of his illness was wholly unexpected. In the death of Mr. Thomson the country loses one of its foremost railroad men, who, in addition to a thorough engineering and mechanical knowledge, possessed to an unusual degree the executive and practical qualifications necessary to direct each and every branch of a great enterprise such as the Pennsylvania Railroad. Frank Thomson was born of Scottish ancestry at Chambersburg, Pa., on July 5, 1841, his father being a member of Congress, a judge and subsequently professor of law at Marshall College. After leaving the Chambersburg Academy young Thomson entered the Altoona shops of the Pennsylvania road, where he spent four years in obtaining a practical and scientific knowledge of mechanical engineering. Col. Thomas A. Scott, then general superintendent of the Pennsylvania Railroad, quickly recognized the unusual abilities of the young engineer, and he, when subsequently appointed by President Lincoln an Assistant Secretary of War, selected Frank Thomson as his chief assistant in the work of transportation of troops and supplies during the Civil War. In this position he did valuable work, particularly in the South and Southwest, constructing railroads and bridges, making repairs under the most adverse circumstances, and facilitating the movement of troops and the dispatch of supplies to the front. At the close of the war Mr. Thomson was appointed superintendent of the Eastern Division of the Philadelphia & Erie Railroad. In 1873 he became superintendent of motive power of the Pennsylvania Railroad at Altoona, and a year later was appointed general manager of the Pennsylvania system east of Pittsburgh. As general manager Mr. Thomson initiated and carried out important reforms in the management and maintenance of the Pennsylvania road, bringing it to the high state of efficiency which has made it a model of all that a great railroad system should be. He became second vice-president of the road in 1882 and first vice-president in 1888, and two years ago on the death of President George B. Roberts he was advanced to the presidency.

ISAAC G. JOHNSON.

On June 3 Isaac G. Johnson died at his home in Spuyten Duyvil, in his sixty-eighth year. Born in Troy, the son of Elias Johnson, he graduated in 1848 at the Rensselaer Polytechnic Institute, gave two winters to special studies in Philadelphia and soon entered upon the manufacture in Spuyten Duyvil of malleable iron, largely supplanted in later years by steel. His scientific attainments and inventiveness, as well as energy and sound judgment, secured prosperity in business and a place on the boards of banks and insurance companies. In recent years he was interested in projectiles and secured a patent for a cap for armor piercing shell, which was purchased by the



Navy Department and proved its value in the destruction of Admiral Cervera's fleet. His five sons were associated with him in business and he lived among them like a patriarch.

#### PHILIP G. COCHRAN.

In the death on June 1 of Philip G. Cochran, of the firm of Brown & Cochran, the Pennsylvania coke industry lost one of its most prominent members. Mr. Cochran passed away at his home in Dawson, Pa., at the age of 49 years, after an illness of three months. He was the eldest son of James Cochran of Dawson, a pioneer coke manufacturer, who took the first boat load of Connellsville coke to the Cincinnati market. At an early age Philip G. Cochran became associated with his father, and on the death of the elder Cochran in 1894 succeeded him in his various and important business interests, including the firms of Brown & Cochran, owners of the coke plant at Dickerson Run and James Cochran Sons & Co., owners of the Clarissa plant at the same place, also the Juniata Coke Company, owners of the Juniata coke plant at Juniataville, the Jackson Mines Company at Broad Ford, and the Washington Coal & Coke Company at Star Junction, just beginning to erect a plant. In each of these concerns Mr. Cochran was either president, officer or director. He was also president of the First National Bank of Dawson and a director and large stockholder in the Slaymaker Barry Hardware Company of South Connellsville, Pa.

### PERSONAL.

Dr. Richard Moldenke and Geo. S. White, formerly of the McConway-Torley Company at Pittsburgh, have resigned their positions and will shortly enter a wider field in the foundry industry.

Col. S. B. Dick of Meadville, Pa., an official of the Pittsburgh, Bessemer & Lake Erie Railroad, has returned from a trip around the world.

John Williams, president of the Newport Cushion Tire Company of Newport, England, was in Pittsburgh last week. Mr. Williams is in this country looking over the field with a view of establishing a works in the United States for the manufacture of cushion tires for vehicles. It is not improbable that the new plant may be built in Pittsburgh.

William Mattern, lately superintendent of the Old Ferry mills of the Diamond State Iron Company of Wilmington, Del., has been appointed general manager of the Fullerton Iron Company of Fullerton, Pa.

The Republic Iron & Steel Company, Chicago, have appointed the following district sales agents: Buffalo, N. Y., W. S. Johnston, 488 Ellicott Square Building; Birmingham, Ala., W. H. Hassinger; Cincinnati, Geo. M. Clark; Cleveland, Wm. F. Bonnell, Perry-Payne Building; St. Louis, B. S. Adams, American Central Building; St. Paul, Geo. M. Kenyon, 109 Endicott Arcade.

President Henry Morton of Stevens Institute, Hoboken, N. J., has received a letter from Andrew Carnegie donating \$50,000 for the erection of an engineering laboratory in connection with the institute.

Albert F. Prentice of Prentice Bros. Company and A. N. Powell of the Powell Planer Company, both of Worcester, Mass., are now in Europe, having sailed from New York May 24.

Edward Hopkinson, chief electrical engineer for the firm of Mather & Platt, proprietors of the Salford Iron Works, Manchester, England, sailed for home last week after a brief visit to this country. Mr. Hopkinson placed some heavy orders here for electrical machinery and apparatus.

S. B. E. McVay of Pomeroy, Ohio, has been appointed general manager of the Brown-Bonnell plant of the Republic Iron & Steel Company in Youngstown, Ohio.

A. J. Moxham expects to sail soon from Southampton, England, his yacht, the "Erl King," being nearly ready to go in commission.

Geo. G. McMurtry of the Apollo Iron & Steel Company, Pittsburgh, has returned from Europe.

Henry C. Frick of Pittsburgh and his family sailed for Europe on Tuesday, June 6.

Charles H. Hawkins, for many years agent at Chicago for the Brown-Bonnell Iron Company, has accepted a position with the Republic Iron & Steel Company, in charge of one of the divisions of the sales department. Mr. Hawkins has so long been a conspicuous factor in the Western bar iron trade, and has so extensive an acquaintance among railroad officials, implement manufacturers and other heavy consumers, that his continued connection with the business will give much pleasure to a very wide circle of people.

E. W. Parker, formerly with the Brown-Bonnell Iron Company, has been appointed Eastern sales agent of the Republic Iron & Steel Company, with an office in the Empire Building, New York City.

Charles Rinehart has accepted a position in the engineering department with Tippet & Wood, Phillipsburg, N. J.

Richard Stevens, connected with the engineering department of the Edgar Thomson Steel Works for ten years, has resigned his position and gone to Europe.

Walter Gaston, who for the past 11 years has managed the Hazard Mfg. Company, Wilkes-Barre, Pa., so successfully, will resign that position shortly to become the general manager of the Taylor Iron & Steel Company, High Bridge, N. J. Mr. Gaston commenced his business career as a boy with this company.

The New York Court of Appeals has decided in favor of James A. Burden of Troy, N. Y., in the long contested litigation with J. Townsend Burden over the control of the Burden Iron Works.

### An Addition to the Lake Fleet.

(By Telegraph.)

CLEVELAND, OHIO, June 6, 1899.—The announcement just made that A. B. Wolvin of Duluth has closed a contract with the American Ship Building Company, the newly formed consolidation of lake builders, for four 500-foot vessels is taken as a further confirmation of the reported alliance between James J. Hill and the American Steel & Wire Company. Wolvin some months ago sold the Zenith fleet, consisting of five 400-foot steel steamers, to the American Steel & Wire Company, and for a time considered undertaking the management of Hill's Pacific Line. Now the general supposition is that Wolvin will remain on the lakes looking after the interests of the new consolidation. The steamers just ordered will mark a new era in lake vessels by reason of their size. Each will carry 8000 tons of ore, and the aggregate cost will be \$1,400,000. All four vessels will be built at the Lorain, Ohio, yard.

### A Tidewater Steel Plant and Rod Mill.

A plant which will cost about \$300,000 is being built at Astoria, Long Island, by the New York Steel & Wire Company, recently incorporated under the laws of New Jersey. The plant is to be situated on the water front and everything will be received and shipped by water. A 600-foot dock is being constructed, which will be provided with improved hoisting and conveying machinery. The plant is laid out for four 30-ton basic open hearth furnaces, of which two are being installed now, and provisions are being made for the future installation of the remaining two. The handling of materials for the open hearth furnaces will be by means of a 50-ton electric crane. The producers, of which the complete plant will require 16, will be of the Talbot water seal type. The open hearth furnaces will be built by the company themselves and not contracted for. The Talbot continuous ingot furnace with hot blast stoves will probably be adopted. This is rather an innovation and the engineers expect great economy therefrom. The contract has been awarded to the Lewis Foundry & Machine Company of Pittsburgh for a 32 inch blooming mill to be run by a double cylinder reversing engine 28 x 42 inches. For billets the ordinary continuous heating furnace will be used, billets being charged in hot from the blooming mill. The rod mill will be built by the Mossberg & Granville Mfg. Company of Providence, R. I. It will be driven by a 1400 horse-power tandem compound engine, which will be built by Russel & Co. of Massillon, Ohio. In addition to the rod mill there will also be built a merchant bar mill for all smaller sizes of steel shapes. Particular attention is being paid throughout to the economical handling of all material by the introduction of labor saving devices in every department.

There will be a 3000 horse-power boiler plant; the contract for the boilers was awarded to the Biglow Boiler Company, Hartford, Conn. The Manning upright type of boiler will be installed. Boilers will be equipped with Roney stokers and induced draft mechanism. Contract for this equipment was awarded to Westinghouse, Church, Kerr & Co. In order to obtain the greatest economy in fuel consumption a central condensing plant will be built for all steam engines and pumps.

The engineering is under the direction of E. G. Spillbury, 45 Broadway, N. Y.

### Proposed Advances in Iron Freights.

It is evident that the railroads in the Central West propose to share more largely in the present prosperity existing in the iron trade, and with this in view it is proposed to make a material advance in freights on all articles of iron and steel, to go into effect on July 1. At a recent joint meeting of the Pittsburgh, Wheeling, Cleveland, Canton-Massillon, Youngstown and Canal Dover freight committees, held in Pittsburgh, the question of securing some advance in present rates on articles of iron and steel manufacture, pig iron, billets and cinder was considered and very fully discussed. It was decided that, taking effect July 1, rates on pig iron, billets, mill cinder and articles taking same rates, between short haul points in the territory of the committees represented, should be as follows: Pig iron, 75 cents per gross ton; mill cinder and scale, 60 cents per gross ton, and billets, 85 cents per gross ton. These new rates represent an advance of about 10 cents a ton over present rates, and apply between Pittsburgh and Wheeling, Pittsburgh and Mahoning and Shenango valleys; Mahoning and Shenango valleys and Cleveland, and Mahoning and Shenango valleys and Wheeling. It was also decided that the rates on pig iron and billets between Mahoning and Shenango valleys and Buffalo and between Cleveland and Buffalo should be advanced 10 cents per gross ton at the same time. The rates between Pittsburgh and Cleveland, Erie and Ashtabula, and Wheeling and Cleveland to be as follows:

	Per gross ton.
On pig iron.....	\$1.25
On billets.....	1.25
On mill cinder and scale.....	1.00

Rates on cast iron pipe in carloads between the above named territories to be advanced 10 cents per ton. It was also decided that, taking effect on July 1, rates on pig iron and billets, and articles taking same rates, from Pittsburgh to New York, should be \$2.70 per gross ton on pig iron, &c., and \$2.90 on Billets, &c. These rates being on the basis of \$4.50 per gross ton on pig iron and \$4.90 per gross ton on billets from Chicago to New York. It is further decided to advance the rate on pig iron, &c., between Wheeling and Erie to \$1.35 per gross ton; on billets, &c., to \$1.45 per gross ton and on mill cinder and scale to \$1.20 per gross ton. Between Wheeling and Ashtabula the rate on pig iron, &c., is to be \$1.30 per gross ton; mill cinder and scale, \$1.15 per gross ton, and on billets, \$1.40 per gross ton. All the above advances in rates, which have been recommended by the freight committees noted above, will be taken up by the Central Freight Association at their meeting this month, and will probably be adopted, to become effective July 1. The advance in pig iron from Pittsburgh to New York, should the rate be made \$2.70 per gross ton, will be 30 cents. On billets, should the rate be made \$2.90, it will be 20 cents.

The special list of iron and steel articles which now take fifth-class rates in less than carloads and sixth-class rates in carloads was recommended to be again placed according to the official classification at the close of business on October 31. This will have the effect of giving these articles the fourth-class rates in less than carloads and fifth-class rates in carloads. The carload rate, Pittsburgh to New York and Pittsburgh to Chicago, may on November 1 thus be advanced from 15 cents per 100 pounds to 18 cents. This action takes in a long list of the general run of manufactured iron and steel, including bar iron and steel, wire, nails, forgings, castings and various other articles, for all of which 15 tons is the carload minimum.

### The Wages Scales.

Wage scale conferences between wage committees of the Amalgamated Association and the manufacturers will be held in Detroit, Mich., this week and next. The first conference is called for Wednesday, June 7, and the puddling and finishing scales will be considered. The scales governing tin plate mills will be taken up on June 10 and 12, and the sheet mill scales on June 13 and 14. As already noted in these columns, the puddling scale prepared by the Amalgamated Association is based on \$5 for boiling on a 13-10 cent card, with an advance of 25 cents a ton for every 1-10 cent advance in the price of bar iron. The sheet mill scale calls for an advance of 15 per cent. and the tin plate scale about 20 per cent. While a settlement may not be reached at the first conference, it is thought that the new scale will be adopted without a strike. The men may not receive as large advances as they ask for, but will undoubtedly get an increase over present rates.

The Delaware River Iron Ship Building & Engine Works of Chester, Pa., better known as the Roach Ship Yard, will make extensive improvements and additions to the plant, making it in every respect a modern works.

### A Disinterested Opinion on an Anti-Trust Law.

The State of Texas, says the *Chicago Economist*, has stepped into the leadership of the anti-trust battalions. Its Legislature has adopted and its Governor has signed a law, becoming operative on the last day of January, 1900, which is designed to destroy everything having the semblance of a trust or monopoly in that State. Very thorough work was done in the framing of the law, and it was carefully scrutinized by many lawyers selected for their knowledge of such subjects. Accordingly it is believed by the Texas people to be invulnerable. To recite its provisions would be to mention about everything one could conceive of as likely to be in restraint of trade on a large or a small scale or as having in any degree the character of a monopoly. Trusts and monopolies are defined by the act, and then it is set forth that anybody concerned in any such organization will be deemed guilty of conspiracy to defraud and subject to a fine of \$200 to \$5000 for each offense, and the fine runs against him every day he is guilty. It is also provided that violation of the act works forfeiture of a corporation's charter, or, if it is not chartered in Texas, a prohibition of doing business in that State. And every company doing business within the State must make an affidavit at least once a year as to whether it has any participation in a trust. If its officers do not fill out the blank affidavit that is sent out their neglect is considered *prima facie* evidence that the company are violators of the act. A similar blank may be sent to individuals. Prosecuting attorneys get one-fourth of all the penalties collected. Being a party to any combination to regulate the price of any article manufactured or in any way produced within the State, or for the insurance of any property, selling an article at less than the cost of manufacture for the purpose of driving out competition, refusing to buy from or sell to any other person or corporation for the reason that such person or corporation is not a party to a pool, or manufacturing raw materials under a patent on machinery and refusing to put that machinery on the market for sale—all these and many similar acts constitute violations of the law. News associations refusing to sell their news save to customers of their own selection are specially designated as offenders. In the light of experience it is not to be expected that this law will be enforced in any general and thorough way. If it is, Texas will be a good State to emigrate from.

### Blast Furnace Building.

A considerable number of new blast furnace plants are under consideration by large interests, which will materially add to product in 1900 and 1901. The National Steel Company are preparing to build three large stacks. The Buffalo Steel Company will probably build five, at Stony Point, near Buffalo; the Cambria Iron Company will add one or two modern furnaces. The Federal Steel Company are getting out the plans for a group of four large furnaces at South Chicago, and the Carnegie Steel Company are to add two at Duquesne. In the East Joseph Wharton is to build a new furnace at Port Oram, while in the Birmingham district a number of projects are under consideration.

This, of course, is irrespective of the two new stacks, soon to blow in, of the Federal Steel Company, at Lorain, Ohio, the two of the National Steel Company, at Youngstown, the Union Furnace, at Buffalo, or the remodeling of the Laughlin and Isabella plants at Pittsburgh.

The annual meeting of the New York & New Jersey Bridge Company will be held in New York on Tuesday, June 13.

The Georgia Car Mfg. Company of Savannah, Ga., have just built and shipped their first car to South America, under a number of contracts for South American roads. The car goes to the Ferrocarril de Merida, Peto, Brazil.

A dispatch from Vancouver, B. C., says that Marcus Daly, the "Copper King," has experts in British Columbia buying up all desirable copper properties on the coast.

The American Tin Plate Company are now at work dismantling several of the smaller and unfavorably located plants which were taken into the consolidation and distributing the machinery in various of the larger plants, where it is much needed at present. During the last week, we understand, some of the officials of the company visited the works in Brooklyn, N. Y., formerly owned by Somers Brothers, and it is stated that this will be the next plant to undergo the dismantling process.



## The Iron and Metal Trades.

The majority deprecate and deplore the rapid advance in prices, but all find it more prudent and immediately profitable to drift with the tide rather than waste their energies trying to stem it.

The question may be properly raised, to what extent advances in price are justified when decreed by consolidations or associations of manufacturers. Two principal reasons are brought forward, one the advance in raw materials and the other the higher cost due to higher wages. In the cruder products the latter do not really cut much of a figure when compared with the rise in prices. It is a different matter with the long line of finished rolling mill products. In the Central West the annual negotiations between the manufacturers and the men are now in progress, and the labor cost, for a year, on Bars, Hoops, Tin Plates Sheets, &c., is now to be fixed. A very considerable advance is asked by the men. How much or how little of it will be accorded remains to be seen. This time the position of the men is a strong one. The manufacturers, under prevailing circumstances, may be expected to put the added cost upon the selling price. On the top of that they ought to get a figure to compensate them for paying higher wages on contracts taken during the past six months at lower prices for delivery after July 1, when the new wages go into effect. In other words, higher prices seem inevitable on finished goods on this ground.

While manufacturers could not cover themselves on sales made thus far for delivery during the second half of the year, so far as increased cost through rising wages affects them, the matter is different with the advance in raw material.

The majority have undoubtedly purchased supplies for the future on the rise, and we doubt whether any large quantities of Billets have been contracted for above \$25 per ton in the Central West. The recent sales at prices above that have been made for small lots for immediate use, and it is an open question whether as the fall approaches more normal conditions may not prevail. Under the circumstances it is doubtful policy to push up prices—now close to the straining point—on the pretext of recent advances in raw material, which are really largely nominal.

Plates have been pushed upward along the whole line, largely because buyers have put them up on themselves.

In Pig Iron there has been a further general advance. Among the sales of Gray Forge made by Southern furnaces is one lot of 10,000 tons at \$12, Birmingham. Basic Pig has sold in one lot of 5000 tons at \$13, Birmingham. There have been further large transactions in Malleable Pig in Chicago, one interest selling 6000 tons. In Pittsburgh there have been transactions in Bessemer Pig involving about 50,000 tons, this including 17,000 to one large interest and 19,000 tons to another.

Steel has sold in small lots at \$30 to \$31, Pittsburgh, but these figures have little real significance except to emphasize the scarcity. Muck Bars are exceedingly hard to get.

Sharp advances have been made all along the line in Finished Iron and Steel. Structural Material has been put up \$5 per ton, Plates have scored another \$2 advance, with some large contracts placed and pending. Bars and Sheets have risen in all the markets. In the Wire trade a general advance of 25 cents per 100 pounds has been decreed. Tin Plate will probably be pushed up, since the men will be granted a very substantial advance in wages. Steel Rails for early delivery are only obtainable at fancy figures in small lots. With the high prices now ruling for Relays and Old Rails some of the roads which bought on the break last winter must be getting nearly as much for the material per ton which they take out of the track as they paid for the new Rails.

The railroads are determined to come in for their share of the good things going and are advancing rates. This is true of the Central West, and also of the South. We understand that the Virginia furnaces are to pay higher rates on Pig Iron shipments.

## A Comparison of Prices

At date, one week, one month and one year previous.

### Advances Over the Previous Month in Heavy Type. Declines in Italics.

	June 8, 1899.	May 31, 1899.	May 10, 1899.	June 8, 1898.
<b>PIG IRON:</b>				
Foundry Pig, No. 2, Standard, Philadelphia.....	\$16.50	\$16.25	\$15.75	\$10.50
Foundry Pig, No. 2, Southern, Cincinnati.....	15.50	15.00	14.50	9.00
Foundry Pig, No. 2, Local, Chicago.....	16.50	16.00	15.50	11.00
Bessemer Pig, Pittsburgh.....	18.00	17.65	15.65	10.40
Gray Forge, Pittsburgh.....	16.25	15.50	14.75	9.15
Lake Superior Charcoal, Chicago.....	18.00	18.00	.....	11.50
<b>BILLETS, RAILS, ETC.:</b>				
Steel Billets, Pittsburgh.....	30.00	29.00	26.00	14.75
Steel Billets, Philadelphia.....	31.00	30.50	28.50	17.00
Steel Billets, Chicago.....	32.00	.....	27.00	16.25
Wire Rods, Pittsburgh.....	.....	.....	32.00	20.00
Steel Rails, Heavy, Eastern Mill.....	26.00	26.00	25.00	17.50
Spikes, Tidewater.....	1.75	1.70	1.70	1.40
Splice Bars, Tidewater.....	1.65	1.50	1.40	1.05
<b>OLD MATERIAL:</b>				
O. Steel Rails, Chicago.....	12.00	12.00	11.50	7.75
O. Steel Rails, Philadelphia.....	14.50	14.50	14.00	10.50
O. Iron Rails, Chicago.....	18.00	18.00	18.00	12.25
O. Iron Rails, Philadelphia.....	18.00	18.00	18.00	12.00
O. Car Wheels, Chicago.....	15.50	15.50	14.75	11.50
O. Car Wheels, Philadelphia.....	15.50	15.00	15.00	10.25
Heavy Steel Scrap, Chicago.....	11.00	11.00	10.00	8.00
<b>FINISHED IRON AND STEEL:</b>				
Refined Iron Bars Philadelphia.....	1.65	1.60	1.55	1.05
Common Iron Bars, Youngstown.....	1.80	1.70	1.55	0.90
Steel Bars, Tidewater.....	1.90	1.85	1.75	1.10
Steel Bars, Pittsburgh.....	2.00	1.90	1.65	0.90
Tank Plates, Tidewater.....	2.50	2.40	2.20	1.25
Tank Plates, Pittsburgh.....	2.35	2.25	2.10	1.10
Beams, Tidewater.....	1.90	1.63	1.63	1.30
Beams, Pittsburgh.....	1.75	1.50	1.50	1.15
Angles, Tidewater.....	1.90	1.65	1.65	1.20
Angles, Pittsburgh.....	1.75	1.50	1.50	1.05
Skelp, Grooved Iron, Pittsburgh.....	2.05	1.90	1.70	1.05
Skelp, Sheared Iron, Pittsburgh.....	2.20	2.10	1.90	1.10
Sheets, No. 27, Chicago.....	3.00	3.00	2.90	1.95
Sheets, No. 27, Pittsburgh.....	2.85	2.85	2.70	1.85
Barb Wire, f.o.b. Pittsburgh.....	2.95	2.70	2.70	1.70
Wire Nails, f.o.b. Pittsburgh.....	2.35	2.10	2.10	1.30
Cut Nails, Mill.....	2.05	1.75	1.65	1.07½
<b>METALS:</b>				
Copper, New York.....	18.50	18.50	18.50	11.87½
Spelter, St. Louis.....	6.45	6.45	6.75	4.12½
Lead, New York.....	4.45	4.45	4.45	3.75
Lead, St. Louis.....	4.30	4.32½	4.35	3.62½
Tin, New York.....	25.40	26.65	25.30	14.90
Antimony, Hallett, New York.....	10.00	10.00	10.00	8.75
Nickel, New York.....	38.00	38.00	38.00	34.00
Tin Plate, Domestic, Bessemer, 100 lbs., New York.....	4.05	4.05	4.05	2.85

### Chicago (By Telegraph.)

Office of The Iron Age, 805 Fisher Building. }  
CHICAGO, June 7, 1899. }

The high range of prices now ruling and the continued disposition of the market to advance cause much anxiety among men of experience in the Iron trade. They acknowledge that conditions are different from anything previously existing, but are, of course, influenced by the belief that rapid advances must at some time lead to a checking of trade and an abrupt decline. Such a time, however, appears to be remote, as everything points to much higher prices than have yet been ruling. An advance of \$2 to \$5 per ton is made more easily and accepted by buyers with better grace than 25c. to 50c. three or four months back. Our reports from the different branches of trade show a number of marked advances during the week. Among these was \$5 per ton added to the previous price of all kinds of Wire and Wire products. It is believed that another advance in Wire Nails will be made before July 1.

**Pig Iron.**—The demand continues strong. The advances recently noted have not checked buying, but seem to have made the desires of consumers stronger to get more Iron. Local furnaces have withdrawn from the market, refusing to quote on further business, but consumers insist on being taken care of, and are going so far as to drop exacting specifications and are willing to submit to any terms made so as to be sure of getting what they want for the last six months of the year. The tonnage placed in the past ten days has been exceedingly large, the greater part coming from the malleable trade. General consumers, however, are buying quite freely, and inquiries now coming forward indicate a great deal more business to be recovered in the near future. Some buying of Southern Iron is reported, but furnace companies are one after another withdrawing from the market, so that the number of sellers is getting quite limited. The idle furnaces about to start up will go in blast with a great part of their output under contract. Some Iron has been purchased by the Pipe foundries, but so far as can be learned no large quantities were taken in any case. Buyers are paying almost any price for Iron for immediate delivery. Sales are reported in this way of Lake Superior Charcoal as

high as \$21. Chicago, and strictly 8 per cent. Silicon Coke Iron at \$22. We quote for cash as follows:

Lake Superior Charcoal.....	\$18.00 to \$20.00
Local Coke Foundry, No. 1.....	17.00 to 17.50
Local Coke Foundry, No. 2.....	18.50 to 17.00
Local Coke Foundry, No. 3.....	18.00 to 18.50
Local Scotch, No. 1.....	17.50 to 18.00
Ohio Strong Softeners, No. 1.....	19.00 to 20.00
Southern Silvery.....	18.50 to 18.75
Southern Coke, No. 1.....	18.50 to 18.75
Southern Coke, No. 2.....	18.00 to 18.25
Southern Coke, No. 3.....	15.50 to 15.75
Southern Coke, No. 1 Soft.....	18.50 to 18.75
Southern Coke, No. 2 Soft.....	18.00 to 18.25
Foundry Forge.....	15.00 to 15.50
Gray Forge and Mottled.....	15.00 to 15.50
Southern Charcoal Softeners.....	17.00 to 17.50
Alabama and Georgia Car Wheel....	18.50 to 19.00
Malleable Bessemer.....	17.00 to 18.00
Standard Bessemer.....	18.00 to 18.50
Jackson County and Kentucky Silvery, according to Silicon.....	20.00 to 21.00

**Bars.**—The market is exceedingly active, a great deal of business having been placed in both Bar Iron and Soft Steel Bars. A number of implement contracts have been entered and negotiations are pending for a great deal more tonnage from this source. The business to be done now, however, may be lighter than previous years, because some of the largest implement manufacturers had the foresight to protect themselves against present prices by making purchases at various times from the beginning of the year for their requirements this fall and winter. Business with car builders is in very good shape, specifications being placed very freely against old contracts, while in some cases these specifications exceed original quantities. Some new car orders are in the market, so that an additional demand for Bars is expected from this source. Common Bar Iron has advanced \$2 per ton since our last report, mill shipments being now quoted at 1.80c., Chicago. Soft Steel Bars are also higher and it will be difficult to get anything under 2c., Chicago, while Pittsburgh manufacturers are quoting as high as 2.15c. Hoops are held at 2.15c., base, Chicago, for Bands, but an advance is daily expected. The demand for these is good. Jobbers report an extremely active trade, being unable to get Iron or Steel as rapidly as their customers require it. They have advanced their prices and now quote 2.10c. for Bar Iron, 2.30c. for Soft Steel Bars, and 3.25c. for large lots of Norway and Swedish Iron and 3.50c. for small lots.

**Car Material.**—Inquiries are in the market for a considerable quantity of cars, comprising lots from several systems, but the car builders are all so extremely busy that it is a question whether any of them can make the deliveries desired. Steel Axles have been advanced another \$5 per ton and are now quoted at 2.40c., Chicago, for sizes under 400 lbs.

**Structural Material.**—The even tenor of the market has been interrupted by an advance of \$5 per ton on all Structural Material, which took effect on the 1st inst. No large contracts have come up recently or are now in sight, but an extremely good demand is noted for moderate quantities of material. Advanced prices have not checked business. Mill shipments are quoted as follows, Chicago delivery: Beams, Channels and Zees, 15 inches and under, 1.90c.; 18 inches and over, 2c.; Angles, 3 to 6 inches, 1.90c.; over 6 inches and under 3 inches, 2c.; Tees, 1.95c.; Universal Plates, 2.05c. Store prices are from ¼c. to ½c. above these rates.

**Merchant Pipe.**—The only Pipe available now is that carried in local warehouses, on which the full base of 60 per cent. off is easily obtained. Manufacturers and jobbers report a continued demand, and the mills are steadily being urged to make prices for future delivery, which they are unable to do. It is reported that another advance on Pipe will be made this week. Boiler Tubes are in extremely good demand. The stocks carried by local jobbers are evidently about the largest in the country, as they are being drawn upon for shipment as far as Eastern Pennsylvania. Merchant Steel Boiler Tubes are now quoted in small lots, 1¼ to 1½ inches, inclusive, 40 per cent. off; 2 to 2¼ inches, inclusive, 52½ per cent. off; 3 inches and larger, 57½ per cent. off, with an extra 5 off for carload lots.

**Cast Iron Pipe.**—Buyers of Pipe appear to have finally made up their minds that the prices now asked are justified by the ruling conditions in the Iron trade and contracts are being rather freely placed. The business of the past week includes 4100 tons for St. Louis and 2700 tons for Chicago. A contract will soon be placed for 4000 to 5000 tons in Cincinnati. The prevailing price of Pipe is about the usual spread above the cost of Pig Iron.

**Plates.**—The demand continues, but mills are doing very little of the current business, being able to take care of but little beyond the railroad trade. Jobbers are handling the greater part of the business now being

done in this locality. They quote small lots of Tank Steel from stock from 2.75c. to 3c. Mill shipments are quoted as follows, Chicago delivery: Tank Steel, 2.65c.; Shell, 2.75c.; Flange, 2.85c.; Marine, 2.95c.; Fire Box, 3c. upward, according to brand.

**Sheets.**—Indications point to the very strong probability that the proposed consolidation of Sheet mills will not be carried through. Mills that were absolutely sealed up for some time are now ready to take business. A fair inquiry is noted for Black Sheets, but not for such deliveries as the mills are able to make. The Galvanized Sheet trade is fairly active. Mill shipments of No. 27 Black are quoted at 3c. to 3.15c., Chicago, while Galvanized Sheets are held at 70 and 10 and 5 to 70 and 5 per cent. off. Jobbers quote small lots of No. 27 Black at 3c. to 3.15c.; Wood's Smooth, 3.35c., and Galvanized at 70 and 5 to 75 per cent. off.

**Merchant Steel.**—Manufacturers' agents report a fair week's trade, the demand not being checked by advanced prices. Mills are so well sold up that another advance of \$2 per ton is announced. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery Steel, 2.55c. to 2.65c.; Smooth Finished Tire, 2.35c. to 2.45c.; Open Hearth Spring Steel, 2.80c. to 2.90c., base; Toe Calk, 2.55c. to 2.65c., base; Ordinary Tool Steel, 6c. to 7c.; Specials, 10c. and upward. Jobbers are quoting small lots from stock at 2.85c. for Tire, 2.95c. for Machinery, 3.40c. for Spring, and 3.05c. for Toe Calk, full extras.

**Billets and Rods.**—Ordinary Bessemer Billets are easily worth \$32 here on the basis of sales made further East. The local producers have none for sale and will not have for some considerable time. No transactions in Wire Rods have taken place, but sales are reported in the vicinity, opening at \$40 to \$42.

**Rails and Track Supplies.**—A sale of 8000 tons of Standard Sections of Steel Rails has been made for December delivery at \$26. Small lots are easily commanding \$2 to \$3 above this price. Manufacturers have for a long time been quite conservative with regard to the price of Steel Rails, but their price is now so far below that ruling on other Steel products that an advance is expected at an early date. A good demand is reported for Light Rails, on which shipments can be made from the local mills from August forward, and prices are quoted at \$30 to \$37, according to weight. Track Supplies are quoted as follows: Fish Plates, 1.55c. to 1.60c.; Splice Bars, 1.55c. to 1.60c.; Spikes, 2.25c. to 2.35c.; Track Bolts, with Hexagon Nuts, 3c. to 3.10c.; Square Nuts, 2.85c. to 2.90c.; Steel Links and Pins, 2.25c. to 2.30c.; Iron Links and Pins, 2c.

**Old Material.**—Steel melting stock has been in specially good demand and prices are somewhat firmer. Cast Scrap has also been a little more active. Old Iron Rails have sold for delivery at Western points at close to the equivalent of Chicago quotations. Some sales of Scrap and Busheling Scrap have been made, but consumers are fairly well supplied and not buying freely. Dealers' selling quotations are as follows, per gross ton: Old Iron Rails, \$18; Old Steel Rails, mixed lengths, \$12 to \$12.50; Old Steel Rails, long lengths, \$13 to \$13.50; Relaying Rails, \$19 to \$20; Old Car Wheels, \$15.50; Heavy Melting Scrap, \$11 to \$12; Mixed Steel, \$8.50. The following selling prices are per net ton: No. 1 Railroad Wrought, \$15.50 to \$16; Dealers' Forge, \$12.50; Fish Plates, \$16.50; No. 1 Mill, \$9 to \$9.50; Heavy Cast, \$10.75 to \$11; Stove Plates, \$7.50 to \$8; Iron Car Axles, \$18.50; Horseshoes, \$11.50; Cast Borings, \$5.50 to \$6; Steel Axle Turnings, \$8.25; Iron Axle Turnings, \$8.75; Machine Shop Turnings, \$7.

**Metals.**—Copper is holding its own, carload lots of Lake being still quoted at 16¼c. and Western brands 7¼c. Spelter is a trifle lower at 6.50c., while Lead is also easier at 4.40c.

**Tin Plate.**—The trade is expecting an advance by manufacturers and in the meantime some of the jobbers have anticipated it by advancing their Old Style Roofing Plates \$1 per box. An exceedingly good demand is noted for Roofing Plates, while a fair trade is being done in Bright Plates.

In the Cincinnati market report of May 24, the statement was made that "the Pioneer Furnace, recently sold to the mill consolidation, is credited with orders on the books for about 30,000 tons of Foundry Iron, which may be released, and the buyers sent again to the open market for their wants." We are officially advised that this report, which obtained some currency in other markets also, is incorrect, and that the orders in question will be filled.



## Philadelphia.

Office of The Iron Age, Forrest Building, 1  
PHILADELPHIA, PA., June 8, 1899.

The Iron and Steel market has shown increasing strength all through the week and prices have now reached a point beyond anything seen for nearly ten years past. The demand is more urgent than ever, so that mills and furnaces have no chance of catching up with their orders, except by declining all further business, which many are trying to do, but with only partial success. Consumers have to be prodding producers all the time to get enough material into their works to go on with, but there is a shortage all around, so that it is a continuous struggle to keep up with the procession. The advance during the week of \$5 in Structural Material and \$2 in Plates does not check the demand in the least; all that is needed to satisfy buyers is to get them the material, and there will be no trouble in regard to anything else. Makers are beginning to seriously consider whether they should take long contracts or not. Cost of production is creeping up terribly, and as there are no signs of a slackening up in the demand, it is a question whether there may not be still higher prices during the last half of the year—possibly a good deal higher. Nobody really wants to see any further advance just now, as every dollar up means a dollar down some of these days, so that steady and uniform prices would be much preferred if it is at all possible to keep them there. There are the midsummer stoppages to contend with, however, and possibly hot weather stoppages, hence the unwillingness to sell unless at prices which in a measure offset contingencies of this kind. For the present, therefore, there is no probability of anything but strong markets and high prices; how much higher depends upon conditions not yet developed.

**Pig Iron.**—There is not much business doing simply because there is not much iron to sell. Deliveries are being made as rapidly as possible, and new engagements on a large scale could be made for the last half of the year, but sellers are extremely cautious in regard to adding to their already somewhat heavy contracts. This leads to very irregular prices, some being willing to accept a small business at a trifling advance on last week's prices, others ask considerably more money, while a few others lay back until they can get some clear idea of what the situation is likely to be after the midsummer holidays. No. 2 Foundry ranges from \$16.50 to \$17; some ask \$17.25, but business actually closed is fairly represented by the first named figures. There is plenty of inquiry and if makers were disposed to accept orders for six months' deliveries at prices above named a large business could be done immediately. There is also good inquiry for Basic Iron, but there is very little offering, and \$17 to \$17.25 is about as low as makers would be inclined to consider. To-day's quotations for seaboard or nearby points would be about as follows, but holders are ready to move to still higher figures on very slight provocation: No. 1 X Foundry, \$17.50 to \$18; No. 2 X Foundry, \$16.75 to \$17.25; Plain, \$16.25 to \$16.50; Standard Mill Iron, \$16 to \$16.25; Cinder Irons, \$14.75 to \$15; Basic, \$17 to \$17.50; Low Phosphorus, \$19.75 to \$20, according to points of delivery.

**Billets.**—There is a great deal of inquiry for Steel, but very little to be had. Lots amounting to several thousand tons were taken late last week at \$30.80, but the supply was soon exhausted, and from \$31.25 to \$31.75 would probably be nearer the market at this time.

**Plates.**—The demand is very heavy, and comes from all classes of buyers. From the urgency that is shown to get material it might be supposed that prices were very low, and that the demand was just beginning, the nine or ten months of unprecedented activity having no effect whatever. Prices are about \$2 per ton dearer than last week and for seaboard or nearby points are quoted as follows: Carload lots and upward are quoted at 2.50c. to 2.60c. for ¼-inch and thicker; Shell, 2.60c. to 2.65c.; Flange, 2.80c.; Fire Box, 2.85c. to 3c.

**Structural Material.**—The \$5 per ton advance made last Thursday seems to have had no effect so far as concerns the demand, buyers being as numerous and importunate as ever. Nothing is likely to change the present favorable conditions. Prices are nominally as follows, but special rates are paid for June and July deliveries: Angles, 1.83c.; Beams, 15-inch, 1.83c.; Tees, 1.90c.; Zee Bars, 1.90c.; Bulb and Deck Beams, 1.95c. to 2c.

**Bars.**—There is an extraordinary demand for Bars and mills are compelled to turn down a great many orders. There is a good deal of inquiry for long delivery, but manufacturers are afraid to quote on such, as they are unable to form any very definite idea as to what the cost may be during the last half of the year. Prices are

irregular, but mostly within the range named herewith for seaboard delivery or its equivalent: Ordinary Bars, 1.50c. to 1.55c.; Refined Bars, 1.65c. to 1.70c.; Test Bars, 1.75c.; Steel Bars, 1.95c. to 2.10c.

**Sheets.**—The demand is fully equal to all that can be supplied, and mills are working to their extreme limit so as to get a little ahead before the hot season sets in. Prices are firm, but not materially different from those of last week—viz.: For best makes (Common Sheets two-tenths less): No. 10, 2.70c.; No. 14, 2.80c.; No. 16, 2.90c.; Nos. 18-20, 3c.; Nos. 21-24, 3.10c.; Nos. 26, 27, 3.20c.; No. 28, 3.30c.

**Old Material.**—Firm and somewhat higher bids from consumers. Holders expect higher prices, however, but a fair average of prices realized during the week would be as follows for deliveries in buyers' yards: Cast Borings, \$10.75 to \$11; Wrought Turnings, \$11.75 to \$12.25; Machinery Cast, \$13.25 to \$13.75; Old Car Wheels, \$15.50 to \$16; Heavy Steel Scrap, \$14 to \$14.50; Steel Rails, \$14.50 to \$15; Iron Rails, \$18 to \$19; No. 1 Railway Scrap, \$18.50 to \$19; Iron Axles, \$21 to \$22; Steel Axles, \$16.50 to \$17.50; Steel Shafting, \$19.50.

(By Telegraph.)

The market is stronger on all grades of Pig Iron. Sales have been made of several thousand tons of Basic Iron at \$17.50, delivered to nearby mills, and low price Phosphorus at \$20.

## Cleveland.

CLEVELAND, OHIO, June 5, 1899.

**Iron Ore.**—The latter part of the week just closed held a surprise of considerable proportions for Ore shippers and vesselmen as well. There has been a very general impression even among those most thoroughly conversant with the situation that the shipments of Iron Ore made thus far this season were in the aggregate far behind the quantity moved at this time last season. Indeed, it was hardly apparent how it could be otherwise. In the first case, navigation opened several weeks later than in 1898, then dissatisfaction on the wage question among the Ore handlers at Lake Erie ports caused some delay, and finally the grain strike at Buffalo served to tie up a large number of vessels for a considerable time. The surprise above mentioned is constituted by the fact that, notwithstanding all the circumstances above mentioned, when the figures were made up for the aggregate to June 1 they disclosed the fact that the Ore shipments from the head of the lakes, including of course Duluth, Superior and Two Harbors, were far in excess of those for the corresponding period last season. The total shipments from the three ports mentioned were 925,782 tons, as against 805,897 tons on the same date last year, an increase of 119,885 tons. From Duluth the first cargo of Ore was shipped this year on May 4, while last year the first vessel got away April 21. The degree of tardiness in the opening of navigation this season was about proportionate at the other ports. From the docks of the Duluth, Missabe & Northern road there have been shipped thus far this season 344,482 tons, as against 249,140 tons to June 1 last year. From the Duluth & Iron Range docks the shipments have aggregated 495,300 tons, as compared with 376,745 for the corresponding period in 1898. The Eastern dock at Allouez Bay has shipped 86,000 tons, a gain of 6000 tons on last year's figures. With the present easier feeling in the matter of handling the Ore situations so far as the aggregate of shipments is concerned, the chief point for the consideration of shippers would seem to be found in the possibility of a failure of the labor market in the mining districts. Of the size of the forces at Lake Erie ports and their ability to give vessels good dispatch there can be no doubt, but there is an element of uncertainty as to how long the present adequate supply of labor in the mines will continue. Meanwhile freight rates show no change over a week ago, charters being made at 75c. from the head of the lakes, 70c. from Marquette and 60c. from Escanaba. Efforts were being made during the past few days to "bull" the rates another 5c., but they failed signally, and in view of the showing of the amount of Ore already brought down, it may be set down as a good surmise that it will be some days before an advance becomes more than a possibility.

**Pig Iron.**—The great strength of the market shows no impairment whatever, and the demand for all grades of Iron continues, although, of course, on the basis of still higher prices. Immediate delivery is seemingly as desirable as it is impossible of attainment, probably by reason of the fact that while almost all consumers of Pig Iron have secured a more or less adequate supply months ago, these supplies are in many cases found to be inadequate when the time for consumption arrives. This has brought about the present conditions, wherein it is safe to say that any one having either Foundry or Bessemer Iron for sale could secure practically any price within reason which they might demand. There is an almost universal opinion

that if the present demand keeps up nothing can prevent the price going to \$20 and over, and there would be little surprise to see it attain to this figure by July 1. Sales reported during the week just closing have been exceeding few, and those announced of small lots. Quotations are \$17.50, Valley, for No. 1 Foundry and \$17 for No. 2 Foundry. It is difficult to even obtain quotations on Bessemer, one seller making a price of \$18.50, Valley, for fourth quarter delivery. No sale was, however, made at this figure. Lake Superior Charcoal is practically out of the market, although there is not a particle of doubt that were any offered \$20 on Lake Erie dock would be obtainable with little effort.

**Finished Material.**—There is no question but what it is more difficult to get Finished Material of all grades than a week ago, and reports of poor shipments are universal. The advance of \$5 per ton on all grades of Structural Material has been well taken seemingly, and has, at any rate, had no visible effect upon a good local inquiry and an order mail of fair proportions. A sale of about 5000 tons of Ship Plate is reported. The Plate quotation is 2.50c. for Ship grade, with other grades proportionately higher. The announcement is made that the American Shipbuilding Company, the combine of lake shipyards recently formed, has secured control of the Wheeler Shipyard at West Bay City, Mich. This leaves the yard of the Craig Shipbuilding Company, at Toledo, as practically the only builders of steel ships on the lakes not included in the combine. It is understood that the Craig people will only dispose of their plant on a cash basis, but that they will come to an understanding with the consolidation as to prices for both new tonnage and repair work. The principal offices of the American company have been established in this city, and it is understood that all material will be purchased here. The Pipe market shows a queer condition of affairs. Local sales agents report sales at 60, one 10 off. The regular price is somewhat lower than this, but the mills are so well sold up that they will no longer make quotations without specifications. The general quotation for Bar Iron is 1.80c., but sales have been made out of stock at 1.75c., half extras. The quotation for Steel Bars, out of stock, is 2.25c., half extras. An advance of \$1 per ton has been made in all grades of Sheets of No. 20 gauge and heavier. No. 27 is quoted at 2 35c. There continues to be a fair inquiry for Railroad Iron, but with the mills practically sold up for the remainder of the year the outlook is by no means encouraging.

**Old Material.**—The market shows no change from last week, either in quotations or general prevailing conditions. The supply shows no improvement on the one hand, while on the other hand dealers seem to have no difficulty in disposing of all the Scrap that they can get hold of. The present week is not likely to see any further advance.

### Cincinnati. (By Telegraph.)

Office of The Iron Age, Fifth and Main streets, {  
CINCINNATI, June 7, 1899.

There is no change in the general conditions and the market for Pig Iron has continued strong and active throughout the week. The demand is still strong and bids fair to increase rather than lessen during the next few weeks. There has been good buying in Foundry and Malleable grades, and also a few good orders of Mill Irons. A few furnaces recently blown in whose contracts do not commence to run for a month or six weeks from now are finding a very eager demand for the Iron they are now making. As a result this Iron being for immediate delivery is bringing fancy prices from 50c. to 75c. above maximum quotations. There has been a general advance on all grades, both Northern and Southern, and much more irregularity exists than has for some weeks past. A sale made to-day of 10,000 tons Southern Gray Forge is reported on the basis of \$12, Birmingham. Higher prices are bound to come, and some authorities are predicting \$15, Birmingham, for No. 2 Foundry within the near future. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1.....	\$16.00 to \$16.50
Southern Coke, No. 2.....	15.50 to 16.00
Southern Coke, No. 3.....	14.75 to 15.50
Southern Coke, No. 1 Soft.....	16.00 to 16.50
Southern Coke, No. 2 Soft.....	15.50 to 16.00
Southern Coke, Gray Forge.....	14.25 to 14.75
Southern Coke, Mottled.....	14.25 to 14.75
Ohio Silvery, No. 1.....	19.00 to 21.00
Ohio Silvery, No. 2.....	18.00 to 20.00
Lake Superior Coke, No. 1.....	17.25 to 17.75
Lake Superior Coke, No. 2.....	17.00 to 17.25

#### Car Wheel and Malleable Irons.

Standard Southern Car Wheel.....	\$16.75 to \$17.75
Lake Superior Car Wheel and Malleable.....	20.00 to 21.00

**Plates and Bars.**—Market strong and active. Mills

all busy. We quote, f.o.b. Cincinnati: Bars, wholesale, 2c., with half extras; retail, 2.10c., with full extras; Bar Angles, 2.25c. for ½-inch and larger; Sheets, No. 10, 2.70c.; No. 27, 3.10c.; Plates, 2.50c. to 2.75c.

**Old Material.**—Market has been quiet. Prices are irregular. A fair quotation is as follows, f.o.b. Cincinnati: No. 1 Wrought Iron Railroad Scrap, \$16 gross ton; Cast Scrap, \$11, gross; Axles, \$21, gross; Iron Rails, \$19; Steel Rails, \$13.50 to \$14; Car Wheels, \$14.50.

### Birmingham.

BIRMINGHAM, ALA., June 5, 1899.

There was probably not as much Iron sold last week as there was the preceding week. There was no lack of demand, but there was an indisposition in some quarters to sell for the deliveries desired. As it is, no inconsiderable amount of the different grades has been registered for delivery the first half of 1900 and pretty well distributed from January to July. The sales for cash and nearby delivery are very restricted for reasons so frequently stated that there is no need for repetition. Prices have been irregular, but the tendency has been and continues to be toward higher values. If there isn't a famine in the supply of Iron this month then the indications are very misleading. Particular inquiry has been made as to whether the demand was localized or whether it was general; also whether it came from large buyers or from small buyers. The answer was that the demand was general from all the buying districts and included both round lot and small lot buyers. The former are generally buyers of deferred deliveries; the latter of nearby deliveries to supply current wants. To illustrate the vagaries of the buying, one party early in the week asked for the price on 1000 Sand Basic. It was given to him at \$12.25. Friday he came back, accepting it. The only inference to be drawn is that he had used the intervening time in vain efforts to better the price and finally accepted the offer as the best he could do. Similar cases have occurred with other brands, so we can only conclude that our prices are, comparatively at least, on a parity with other markets. Save in exceptional cases sales prices are kept secret and as little information as possible concerning them is imparted. But enough is gleaned to pretty closely approximate values. There were sales of Gray Forge at \$11.75, but it isn't safe to quote it under \$12.25. If it can be had at \$12 there must be extenuating circumstances connected with the purchase. No. 2 Foundry sold all the way from \$12.50 to \$13, and it is unsafe now to quote it under \$13. If Sand Basic brings \$12.25 then Basic from other molds is certainly cheap at \$12.50. No. 4 Forge sold at \$12.25 and some Charcoal Iron (small lot) brought \$15.75, Birmingham delivery. No. 3 Foundry is \$12.50. From these prices, governing actual transactions, one can see they are ragged and that usual regular differences that obtain when market is normal don't prevail now. There is a constant cry for an anticipation of maturing contracts, showing the pressing need of buyers for material to work on; and the furnaces are kept on the rush hurrying shipments and loading from cast house to furnace. Some shipments are going forward on export account, but it is principally on old orders. Very little of it is to the credit of new business.

The warrant yards are still unloading stock into cars and every day shows some depletion. Orders are in now for the loading of several thousand tons. So that shipments are on a scale that leaves no room for any accumulation of stocks either in furnace or warrant yards.

The particulars of the sale of 10 000 tons of 4-inch Steel Billets are now given to correct an error in regard to it. The price obtained was \$25 and the buyer is from the Pittsburgh district. The delivery is October and November. The fact that the first sale by the Steel mill was to the Pittsburgh district will excite much comment.

Another advance in miners' wages of 2½c. per ton, to date from June 1, has been granted, making the fourth advance since the dawn of our recent prosperity. The Tennessee and the Sloss Companies both concede the advance and the others, when they fix price, generally "follow suit." In a few instances 50c. has been the ruling rate where scarcity of miners prevailed.

Some Eastern capitalists have purchased the mines at Coaling Station in Tuscaloosa County. They propose to increase their development and open new mines and largely increase the output of coal. Similar arrangements are being made concerning other Coal interests, and the prospect is fine for the largest output of Coal this year in the history of the district.

The Birmingham Mining & Contracting Company have been incorporated with a capital of \$10,000. The officers are the stockholders and all of them. As the same parties of the new corporation are officers of the Robinson Mining Company and dominate it, the one can be considered as an offshoot of the other.

Sales of machinery for mining purposes have been large, and of late several fine orders had to be declined



because the machinery could not be installed in the limit of time desired. J. A. Yates & Co. have shipped important orders to Montana, Texas, Mexico, Florida, Dakota, besides filling important orders here and in the vicinity. This shows that the prosperity we are enjoying is broadly distributed throughout the country. There has been a very fair inquiry for brown Ore lands and a few sales have been made. Some tracts that were said to contain large quantities have practically "petered" out. There are few things more alluring and few more disappointing.

There is an effort being made in New York now by the parties in interest to combine certain Ore, Coal and furnace interests into one company, capitalized at a good round figure. The success of the plan depends upon the ability to interest New York capital. It will be, if the plan is carried out, an important factor in the Alabama Iron interests.

The various industrial interests that have been from time to time mentioned in these letters are making rapid progress toward completion, and by fall we will have a considerable addition to the number now in existence. There is no inconsiderable work going on to give an increased capacity and add facilities for widening the scope of work done by those already established.

The rolling mills are running full tilt in all departments and are behind on orders in several departments. In their Steel department the same conditions prevail. There is nothing yet to indicate any probable "let up" in the activity that prevails, and if we don't have an active summer there's no use in deducing conclusions from favorable premises.

(By Telegraph.)

The demand for Iron has increased and prices have advanced full 50c. again on all grades. One sale was made of 10,000 tons of Basic Iron at \$13 and 5000 tons of Gray Forge at \$12, both delivery first half of next year. Spot and nearby deliveries are becoming more and more difficult to obtain.

### St. Louis. (By Telegraph.)

Office of The Iron Age, 512 Commercial Building, }  
St. Louis, June 7, 1899. }

**Pig Iron.**—The comparative quiet of the past few weeks has given way to a rather excited feeling in the Iron market. Advances are reported from the raw material to the finished product. Consumers who last week considered it advisable to stay out of the market for futures have come in this week, with opinions radically changed. Numerous small sales have been reported at the advances named below. As the trend of prices continues upward more interest is shown in the supply of those who are covered even into the end of the year. The older buyers who could not be made to see that the present prices would obtain are ready to cast aside their cherished views. Twenty-dollar Iron has been spoken of here for several months past, and it is by no means improbable that this point will be reached before the turn of the year. The local representatives have had some of their furnaces withdrawn entirely, and others quote, but have practically nothing to offer. The past few days have seen the conviction growing firmer in trade circles that still further increases will take place. We quote, f.o.b. cars St. Louis:

Southern, No. 1 Foundry.....	\$16.75 to \$17.00
Southern, No. 2 Foundry.....	16.25 to 16.50
Southern, No. 3 Foundry.....	15.75 to 16.00
No. 1 Soft.....	16.75 to 17.00
No. 2 Soft.....	16.25 to 16.50
Gray Forge.....	14.75 to 15.00
Mottled.....	14.50 to 14.75

**Bar Iron.**—In sympathy with the advances in Pig Iron mill prices for Bar Iron are now quoted at 1.80c. to 1.90c., East St. Louis, and jobbers quote 2.10c., base, full extras, out of stock. Steel Bars have been advanced to 2.30c., full extras, from stock. Specifications for extended delivery are not acted upon favorably by the Bar mills. It is claimed that some of the concerns, for which cash was to have been paid, have not yet been taken over by the new organization. No new business, it is said, is being entered by the mills not yet turned over, but they nevertheless have their hands full on old specifications. A reticence is observed on the part of those in interest, and some details may not yet have been satisfactorily worked out.

**Rails and Track Supplies.**—It has been seen that many large lines have covered their wants for Track Supplies. However, some urgent needs are being presented by a few who will have to pay the advanced price. This week brings some higher figures, and we quote as follows: Splice Bars, 2c.; Track Bolts, with Square Nuts,

3c.; with Hexagon Nuts, 3.15c.; Spikes seem to vary from 2.25c. to 2.50c.; Iron or Steel Links and Pins, 2.20c.

**Pig Lead.**—The market is exceedingly dull for this time of the year. Quotations are practically 4.30c. for Soft Missouri, with Chemical Lead at 4.32½c. No change noted in Lead Ore, which sold at \$26 per 1000 lbs.

**Spelter.**—The market is at a standstill, and we quote nominally 6.45c. to 6.50c. The Miners' Association stood firm on assay prices last week, but the general market suffered a cut of 50c. per ton. Forty-nine dollars and fifty cents was paid for the product of one mine only. The need for some of the higher assay Ores has caused smelters to bid above the products scale, and carried other grades somewhat in sympathy, but while the 50c. cut obtained the fixed prices did not suffer.

**Zinc Ore.**—On account of the decline in the St. Louis Spelter market, the schedule prices on Zinc Ore were reduced \$2 per ton by the Missouri and Kansas Producers' Association. The basing rate for 60 per cent. assay Ore is, therefore, \$45 per ton.

### Pittsburgh.

Office of The Iron Age, Hamilton Building, }  
Pittsburgh, June 7, 1899. }

(By Telegraph.)

**Pig Iron.**—In the last two weeks of May the Valley furnaces sold to four leading consumers over 130,000 tons of Bessemer Pig, prices ranging from \$14 to \$16.50. On Monday of this week a leading consumer bought 19,000 tons at \$17, Valley furnace. These sales, together with old contracts entered some time since by the furnaces, have practically cleared up all the Iron the two valleys will make for the balance of this year. This is an absolute shortage of Iron, but it will probably be relieved to some extent within 60 or 90 days by the blowing in of one Lorain Furnace, one stack at Youngstown and two or three Shenango Valley stacks. Douglas, at Sharpsville, is to go in to-day. Small lots of Bessemer Pig have sold at \$17.75, while a few sales are reported as high as \$18, Valley furnace. It is doubtful if any considerable quantity of Bessemer Pig could be had to-day at much less than \$18, Valley furnace. Gray Forge is very scarce and has sold at \$16.25, Pittsburgh. There is a heavy demand for it and it is hard to get at any price. Nearly all the furnaces running on mill iron are sold up and refuse to quote. Foundry Iron is also very scarce and No. 2 has sold at \$16.75, Pittsburgh. The whole Pig Iron market is excited, with every probability of still higher prices. It would be practically useless to give quotations, as prices in a few days may be considerably higher. We note a sale of 19,000 tons of Bessemer at \$17, Valley furnace; one of 3000 tons at \$17.25, Valley furnace, and a sale of 300 tons at \$17.85, Valley furnace, or \$18.50, Pittsburgh. We note a sale of 500 tons of Gray Forge at \$16.25, Pittsburgh, and a sale of 600 tons of No. 2 Foundry Iron at \$16.75, Pittsburgh.

**Billets.**—Steel is scarcer than ever and can hardly be had at any price. Fabulous prices are being paid for High Carbon and Basic Steels. Ordinary 4 x 4 Bessemer Billets have sold at \$30 to \$30.50, f.o.b. Pittsburgh, and one or two small sales are reported at \$31, Pittsburgh. High Carbon Billets have sold at close to \$34, Pittsburgh, and Basic Billets at about \$38, Pittsburgh. There is a good deal of demand for Basic Billets, with practically none to be had.

**Sheet Bars.**—A sale of 1000 tons of Sheet Bars is reported at \$37.50, maker's mill. The fact that the consolidation of the Sheet mills will probably lie over until fall leads to the belief that the shortage in supply of Sheet Bars will be relieved before long. Several Sheet mills that usually buy Bars have been buying Billets and breaking them down.

**Muck Bar.**—There is a very active demand for Muck Bars, but it is about the scarcest article in the Iron trade and can hardly be had at any price. Several Skelp mills are very badly off for Muck Bar and have paid very fancy prices to get it.

**Spelter.**—The market is considerably easier and prices are lower. We note a sale of 25 tons at 6.35c.,

Pittsburgh. It is probable that this price could be snaded.

**Merchant Pipe.**—For some time two or three of the leading Pipe mills have been practically out of the market as sellers, being filled up for two or three months, and unable to spare any more Pipe and refusing to quote. Merchant Pipe has been sold by jobbers at 60 per cent. off and mills have sold in lots of five and ten carloads at 60 and two 10's. It has been decided to advance prices and the manufacturers have put the price of Merchant Pipe at 50 and two 10's and 5 in carloads, delivered. The price for less than carloads is 50 and two 10's, f.o.b. mill in the Pittsburgh district. A leading local mill has taken an order for 26 miles of 4-inch Pipe for shipment to California.

(By Mail.)

A very important transaction in the Pig Iron market is a sale of 19,000 tons to a leading concern at the full price of \$17, Valley furnace. It is understood that the sale of this Iron practically cleans up all the surplus Pig Iron in the Valleys for the balance of this year. As against this, however, we can note that some additional capacity will soon be on the market. Douglas, Ella and Fannie furnaces, all in the Shenango Valley, will soon start up, the Lorain Steel Company will blow one furnace at Lorain this month, and the National Steel Company, at Youngstown, one stack, about August 1. This will mean not less than 1500 tons additional Iron daily on the market. A good many Eastern furnaces are also getting ready to blow, so that what seems to be an actual shortage in Pig Iron will probably be relieved within the next 60 days. There have been some heavy advances in Iron and Steel this week. Billets have sold at very close to \$31, Pittsburgh, while considerably higher has been paid for high carbon Billets. Plates are up another \$2 a ton, the minimum of Tank being 2.35c., Pittsburgh. Beams and Channels have gone up \$5 a ton. Wire Nails and Wire \$5 a ton, Iron and Steel Bars from \$2 to \$3 a ton, Skelp \$2 a ton, and Rails are also up and will be higher before this week is out. Furnace Coke has sold at \$2.25, Pittsburgh, and is scarce. The whole market is excited, and notwithstanding the very high prices, deliveries are just as difficult as ever to get.

**Ferromanganese.**—We continue to quote domestic at \$85 at mill.

**Structural Material.**—As noted in this report last week, the Beam manufacturers met in New York on Thursday, June 1, and made an advance of \$5 a ton in prices. Demand is referred to as being heavy, and the advance fully warranted by the high prices ruling for Raw Material. A great deal of bridge work has recently been placed, the two local mills taking a good deal of tonnage in the last week. Included in this is the material for a number of bridges on the line of the Great Northern Railway, placed with a local mill. We quote Beams and Channels, 15-inch and under, 1.75c.; 18 to 24 inch, 1.85c.; Angles over 3 inches and up to 6 x 6 inches, 1.75c.; Angles, 2½ x 2½ inches and smaller, 2.10c.; Bulb Angles and Deck Beams, 2.05c.; Zees, 1.75c.; Grooved Rolled Plates, 2c.; Tees, 1.80c., all f.o.b. Pittsburgh.

**Plates.**—Prices have again advanced, and we are advised of sales of Iron Plates on the basis of 2.60c., at Eastern mill, for prompt shipment. On an order for a considerable tonnage, a leading local mill quoted 2.50c. for September and October delivery. A great deal of tonnage is in the market, and demand seems to be as large as ever, notwithstanding the very high prices ruling. One leading local mill is out of the market for the balance of this year. We have advanced prices about \$2 a ton, and quote: Tank, ¼-inch and heavier, 2.35c. to 2.50c.; Shell, 2¼ x 2½ inches, 2.50c.; Flange, 2.50c. to 2.60c.; Marine, 2.65c. to 2.75c.; Fire Box, medium quality, 2.75c.; best quality, 3c. to 3.25c., all f.o.b. at mill.

**Sheets.**—The Sheet market continues extremely active, and prices on both Black and Galvanized have again been advanced. In regard to the consolidation of the Sheet mills, we can state that it is probable this matter will be allowed to lie dormant until fall. Judge Moore, who is actively identified with the movement to consolidate the mills, desires to take an absolute rest from business matters, beginning about July 1, and in view of this, it has been decided to allow the matter to rest where it is until about September. All negotiations, so far as they have gone, indicate that the Sheet mills, with perhaps one or two exceptions, will be consolidated into one company. There is a very large inquiry for both Black and Galvanized, and deliveries from mills are very difficult to get, and there is much complaint from consumers on this account. We quote No. 27 Black Sheets in large lots at

2.85c. to 2.90c.; No. 28, 2.95c. to 3c. We quote Galvanized Sheets at 70 and 10 in large lots, with 15c. freight allowance. For small lots of both Black and Galvanized jobbers quote considerably higher prices than the above.

**Rails.**—The local mill has advanced prices \$1 a ton, and we are advised still higher figures will likely rule before the week is out. We quote Rails in sections of 25 pounds and over at \$26, maker's mill.

**Bars.**—Prices on both Iron and Steel Bars have again advanced about \$2 a ton, and deliveries very hard to get. We quote Iron Bars at 1.80c. to 1.85c. at mill in Mahoning Valley, and Steel Bars at 2c. to 2.10c., f.o.b. mill, Pittsburgh, with half extras. Refined Iron Bars of special grades are quoted at 2.25c. to 2.35c.

**Merchant Steel.**—Prices are very strong and several mills are practically out of the market as sellers. In some cases mills have absolutely refused to accept orders even at very attractive prices. Still higher figures in the next few days are likely. We quote: Soft Open Hearth Machinery Steel, 2.75c.; Common Spring Steel, 2.75c.; crucible analysis, 3c.; Cant Hook Steel, Open Hearth, 3.50c.; Wedge Steel, Open Hearth, 3.50c.; Tire Steel, ¾ x 3-16 inch and heavier, 2.75c.; Plow Slabs, 3-16-inch and heavier, 4 inches wide and over, Bessemer and Open Hearth, 2.75c.; Lay Steel, rolled, 3.25c.; hammered, 4c.; Tool Steel, 6c. to 14c., depending on quality, all f.o.b. Pittsburgh, 30 days.

**Iron and Steel Skelp.**—Very high prices have been paid for Grooved and Sheared Skelp for early delivery. We heard of one lot of 200 tons of Sheared Steel Skelp being sold at 2.90c., Pittsburgh, spot delivery. We quote Grooved Iron and Steel Skelp, 2.05c. to 2.15c.; Sheared Iron and Steel Skelp, 2.20c. to 2.35c., depending on the order and deliveries wanted. There is considerable range in prices quoted, owing to the fact that where a buyer wants prompt deliveries he usually has to pay a premium to get them.

**Pipes and Tubes.**—All kinds of prices are being made for Merchant Pipe, buyers in many cases paying handsome premiums to get early shipments. Jobbers report having sold Pipe at 60 per cent. off, while the mills have sold in carloads at 60 and two 10's, the price depending largely on the urgency of the buyer and deliveries wanted. It is also stated that the base discount on Merchant Pipe will be advanced this week to 50 per cent. off and two 10's, and 5 for carload lots. The National Tube Company have not yet formally taken over the mills, but will do so during this month. It is also intimated that the price of Casing will be again advanced in a few days on account of the heavy demand and the very high prices ruling for Raw Material. We quote Screw and Socket Joint, 3¼-inch and larger, at 45 per cent.; Inserted Joint, 40 per cent., with an extra 5 per cent. to dealers. Demand for Boiler Tubes is the heaviest ever known, and early deliveries are impossible to get. All the mills making Tubes are sold ahead for two or three months. It is not unlikely prices will soon be advanced, perhaps this week. We quote 1¼ to 1½ inch Iron and Steel, 40 per cent. off list; 1½ to 2½ inch, Iron, 50 per cent.; Steel, 55 per cent.; 2½-inch and larger, Iron, 55 per cent.; Steel, 57½ per cent., with an extra 5 per cent. to dealers.

**Connellsville Coke.**—In May the H. C. Frick Coke Company shipped 32,505 cars of Furnace, Foundry and Crushed Coke, or very close to 650,000 net tons. There is a heavy demand for Coke and Furnace Coke for prompt shipment has sold at \$2.25 at oven. Last week there were 16,574 ovens in the Connellsville region active and 2079 idle, the production being 173,511 tons. We quote Furnace Coke at \$2.15 to \$2.25, and Foundry Coke at \$2.15 to dealers and \$2.30 to consumers, in tons of 2000 pounds, at oven.

## The English Iron Markets.

**Summary.**—Since the resumption of work after the holidays a satisfactory volume of new work has come forward and there have been more numerous inquiries for Pig Iron at prices which are hardening rapidly. The demand for Finished Iron continues excellent, and all the leading centers of the trade are fully occupied. There is no change in the Steel trade; new orders are fewer in amount, but the total work in hand compares satisfactorily with that of any previous period. Engineers are in receipt of numerous contracts and all departments are busy, while the shipbuilding trade is in a similarly satisfactory condition. Abroad trade is recovering from the dearth of fuel entailed by the Belgian Coal strike, and in Germany, France and Belgium business is active and prices firm.

**Pig Iron.**—Business on the northeast coast is very active and the disposition of buyers to place their require-



ments is much more marked than it was a few weeks ago. The recent speculative operations on the warrant market have not interfered with the course of legitimate trade to the same extent as on the occasion of the last spurt. Prices in the Cumberland districts have risen during the last few days, and on Wednesday a further increase brought the price of No. 3 Cleveland up to 56 shillings 3 pence. In Glasgow likewise the upward tendency has found expression in advances varying from 3 pence to 1 shilling per ton in the price of Pig Iron. The steady demand for East Coast Hematite has greatly stimulated this branch of the Pig Iron industry. Cleveland mixed numbers are quoted up to 65 shillings per ton, and even at this price it is difficult to obtain the requisite supplies, and deliveries are greatly in arrears. West Coast descriptions are also scarce and expensive, while for mixed numbers of Bessemer Iron very high prices prevail. On the Manchester Exchange a good demand is experienced for all classes of Pig, but supplies are very limited, while it is almost impossible to obtain Lincolnshire and Derbyshire makes. In South Staffordshire the price of Pig Iron has risen in consequence of the increased cost of Coke, and as the make is much smaller than the demand manufacturers occupy a very strong position and customers have to pay high prices in order to secure early deliveries. Cold Blast Pig Iron is unobtainable at less than 105 shillings per ton, while £5 7s. 6d. is the average price. Trade in South Wales is excellent and high prices are realized for Hematite, both for home consumption and for shipment.

**Manufactured Iron and Steel.**—The holiday stoppage was made as short as possible at all the leading Iron and Steel works, and work was pretty generally resumed by Tuesday or at latest on Wednesday. Not many new orders have been received during the last few days, but it is well understood that there are many yet to come and that the steady demand experienced for so long a period is in no danger of becoming exhausted. A strong upward tendency is exhibited in prices, particularly in the Cleveland and Yorkshire districts. Ambrose Firth of the Brightside Foundry Company, Limited, in connection with J. C. & J. S. Ellis, Limited, of the Norfolk Foundry, have acquired the old established business of Walker, Eaton & Co., Wicker Iron Works, engineers and Iron founders. The Union Foundry, Hunslet, Leeds, is to be sold. At Dowlais it is announced that important extensions are in progress.

**Engineering and Shipbuilding.**—There is no lack of work in the engineering and shipbuilding industries. The hydraulic departments have a large amount of work in hand and there is also a great deal of miscellaneous work in connection with the electrical engineering branches, particularly for electrical installations for collieries and Steel works. Locomotive builders are also busily engaged. Shipbuilders on the Clyde and on the Wear are well supplied with work, as are also those at Belfast.

**Comparison of Prices.**—The annexed table shows the current prices compared with those of last week, and of the corresponding period last year:

	May 26, 1899.		May 19, 1899.		May 27, 1898.	
	s.	d.	s.	d.	s.	d.
<b>Iron Ore—</b>						
Rubio, Middlesbrough.....	15	9	15	6	15	6
Rubio, Cardiff.....	14	9	14	9	15	6
Pottery Mine, North Staffordshire...	14	6	14	6	12	6
Hematite, West Coast (at mines)...	13	6	13	6	11	6
<b>Pig Iron—</b>						
No. 3 Foundry, Middlesbrough.....	56	6	55	6	40	9
Warrants, Middlesbrough.....	56	9	55	7	40	10
Scotch Warrants, Glasgow.....	63	8	.....	.....	47	0
Hematite Warrants, West Coast.....	66	6	64	5	51	0
Cold Blast (Foundry), South Staffordshire.....	105	0	105	0	105	0
Welsh Hematite, Cardiff.....	65	0	63	0	53	0
<b>Manufactured Iron and Steel—</b>						
Marked Bars, South Staffordshire...	8	10	8	10	7	10
Common Bars, South Staffordshire...	7	0	7	0	6	0
Steel Rails, Middlesbrough.....	5	2	5	2	4	10
Steel Rails, West Coast.....	5	2	4	12	4	10
Steel Rails, Cardiff.....	5	5	5	5	4	12
Steel Angles (eng.), Middlesbrough...	7	0	6	10	5	13
Steel Angles (eng.), Glasgow.....	7	0	7	0	5	12
Steel Plates (ship), Middlesbrough...	7	2	7	2	5	17
Steel Plates (ship), Glasgow.....	7	2	7	2	5	17
<b>Tin Plates, Bessemer L.C. Cokes, South Wales.....</b>						
	s.	d.	s.	d.	s.	d.
	12	9	12	3	10	0

—Iron and Coal Trades Review, May 26, 1899.

## The Belgian Iron Market.

BRUSSELS, May 23, 1899.—Since my last report the Belgian metallurgical industry has had a serious trial. All the workmen in the collieries have struck, asking for an increase in wages of about 20 per cent., which the operators declared they could not accord. This strike lasted for three to four weeks, and was finally ended by the resumption on the part of the miners without any increase. During the stoppage of work, however, since

there were no stocks of Coal in Belgium, and since mining was suspended, the rolling mill managers were entirely out of Belgian Coal. Some of them closed down for eight to ten days, and a number of blast furnaces were banked. As much as possible of English, German and French Coals were imported. At the beginning Belgians did not know the best sources of supply, and bought at high prices Coals which were not suitable for their purposes. Gradually, however, they learned, to their cost, to recognize the grades which were suitable for their use. Foreigners have profited from the situation. This has naturally increased the cost of Iron, and profits have for the greater part been wiped out, while some works even have been running at a loss.

The rolling mills have not hesitated to gather the fruits of their sacrifices. The result has been a general rise in prices due to the increased cost, to lessened production, to the growth in the export trade and to the great prosperity in all neighboring and competing countries.

Pig Iron is becoming more and more scarce and prices are rising daily. No. 3 Foundry Iron from the Belgian Luxembourg district is quoted 72 francs per metric ton. Mill Iron is 70 francs, or even higher when small quantities are required for immediate delivery. Belgium itself cannot furnish the necessary Iron for its own market and instead of increasing, the exports continue to decline. England is now furnishing the largest quantities, followed by the Grand Duchy of Luxembourg and by France. The United States occupy the fourth rank, having sent 3895 tons in the first four months of 1899, as compared with 2507 tons in the corresponding period of 1898. In Finished Products the base price of No. 2 Bars has been carried for home orders up to 165 francs per ton; to 170 francs for No. 3, and to 185 francs for No. 4, and 190 francs for Soft Steel. Beams are quoted the same as Bars. In the case of Plates, producers decline to sell at less than 190 francs for No. 2, 200 francs for No. 3 and 210 francs for Sheets. Soft Steel Sheets are quoted at 230 francs.

At the present time export prices are still a little less than those asked for the home market, but this discrepancy cannot help disappearing in view of the increase of Belgian exports and of the excellent business situation in the international market.

## New York.

Office of *The Iron Age*, 232-238 William street, }  
NEW YORK, June 7, 1899. }

**Pig Iron.**—In sympathy with other markets ours has shown a further sharp advance, although the current sales in this district are light. Very little has been done in warrants. The belief is expressed that the advance in prices will lead to some resales by consumers of Iron bought earlier in the year. As yet no such movement has developed, however. The furnaces which have just gone in or are preparing to blow in are sold well ahead and few of them have anything to offer before September delivery. The export sale of 1500 tons referred to last week was for Italy. Yesterday a lot of 1500 tons was sold to go to Bremen and there are orders in the market for Rotterdam. There is an inquiry for 10,000 tons of Southern for Germany. We quote as follows: Lehigh and Schuylkill Irons, No. 1 Foundry, \$17.25 to \$17.50; No. 2 X, \$16.75 to \$17; No. 2 Soft, \$16 to \$16.50; No. 2 Plain, \$16.50 to \$16.75, and Gray Forge, \$16 to \$16.50. Southern brands are quoted: No. 1 Foundry, \$17 to \$17.25; No. 2 Foundry, \$16.50 to \$16.75; No. 1 Soft, \$16 to \$16.25; No. 2, \$15.75 to \$16.25, and Gray Forge, \$15 to \$15.25.

**Cast Iron Pipe.**—No large orders have come into the market. The letting of the contract for 1000 tons for the Aqueduct Commission has been postponed.

**Steel Rails.**—No new orders of any consequence have been placed nor is it likely that at present prices any but urgent small purchases will be made. The demand for Girder Rails is light. We quote Standard Sections nominally \$26 to \$28.

**Track Fastenings.**—We quote Angle Bars 1.65c. to 1.75c.; Spikes, 1.75c. to 1.85c., and Bolts and Nuts, 2.20c. to 2.25c.

**Structural Material.**—During the week contracts have been placed for two structures, the McCutcheon Building and the additions to the Hotel Manhattan, which aggregate about 5000 tons. Another good order is pending. During the week an advance of \$5 per ton has been made on Structural Material, and Plates have advanced about \$2 per ton. We quote as follows: Beams, 1.90c. to 1.95c.; Angles, 1.90c. to 1.95c.; Universal Mill Plates, 2.45c. to 2.50c.; Tees, 1.95c. to 2c.; Channels, 1.90c. to 1.95c.; Steel Plates are 2.45c. to 2.50c. for Tank, 2.55c. to 2.60c. for Shell, 2.65c. to 2.75c. for Flange, 2.80c. to 2.90c. for Fire Box, 2.90 to 3c. for Locomotive Fire Box, on dock.

Refined Bars are 1.65c. to 1.70c., and Common Bars at 1.50c. to 1.55c., on dock. Soft Steel Bars, 1.90c. to 2c.; Steel Axles, 2c. to 2.10c.; Scrap Axles, 1.90c. to 2c.; Links and Pins, 1.65c. to 1.70c.; Hoops, 1.95c. at mill; Best Iron Boiler Rivets, 2.25c. to 2.50c., delivered; Steel Structural Rivets, 1.90c. to 2.10c.; Cotton Ties, 95c. a bundle at mill.

## The New York Machinery Market.

Office of *The Iron Age*, 232-238 William street, {  
New York, June 7, 1899.

Warm weather, the holiday of last week and the cramped condition of the shops were given as reasons for the slight falling off of business which marked the week under review in the machinery district. Inquiry was rather light and the falling off of orders was quite perceptible in all sections. There have been no deals of especial magnitude on the carpet since Dick, Kerr & Co. of England made their purchases some weeks ago. Shipments for export have not been as heavy during the last four weeks as they were just prior to that time.

We are informed in the street of three concerns who have recently increased prices. The Bickford Drill & Tool Company of Cincinnati, it is said, have added an advance of 5 per cent. to their lists. This took effect June 1. The Cleveland Punch & Shear Company of Cleveland are also said to have advanced 5 per cent. W. P. Snyder of Worcester has made another slight advance, which brings the entire increase of price made this year to 12½ per cent.

Considerable interest is still manifested in the trade as regards the Niles-Bement Miles consolidation. Officers of both concerns have denied that the deal has been consummated, but both admitted that the matter has been brought to surface again very recently and is now being considered. It is reported in the trade that the holders of the controlling stock in Bement Miles & Co. are holding out for cash and will not accept stock of any other company as payment for their interests.

A member of the Niles Tool Works Company, when shown the following article, which we quote from a Cincinnati daily, said that although the article was founded on facts the writer evidently knew more about the deal than did the parties directly interested. This is the story:

"The plan originally mapped out for the combination of the Niles Tool Works Company with several other machine tool concerns has been changed somewhat in the past week, so that the new combination will be launched in entirely different shape. It was at first intended to form a company with a capital of \$12,000,000, equally divided between common and preferred stock, to take in the Niles Tool Works Company, the Pond Machine Tool Company, Bement, Miles & Co. and the Philadelphia Engineering Works. The plan as now determined upon will be the issue of \$5,000,000 common and \$3,000,000 preferred stock, a total of \$8,000,000, instead of \$12,000,000 as originally intended. It was the intention at first to put a large amount of the stock on the market, and indeed arrangements were made for the underwriting on the basis decided upon by prominent New York houses. According to the change in the plans there will be none of the common and but \$500,000 of the preferred to be taken, all the remainder, the bulk of the capital, being taken by those in the deal. Of the \$500,000 preferred left for subscription half has been taken already, leaving in reality but \$250,000 to be subscribed. The prospects of the new combination of the four large concerns engaged in the manufacture of heavy machine tools are bright, and the organization is to be perfected on a basis that will insure the 6 per cent. guaranteed on the preferred stock and leave a full 15 per cent. for the common."

In the above article it will be seen that a factor is brought into the deal which has not been previously spoken of. This is the Philadelphia Engineering Works. In explanation of this we are informed that this concern have been controlled for some time past by the Niles Tool Works Company. We understand that since the Niles Company have severed their relationship with the Morgan Engineering Company and have been building their own traveling cranes they have utilized the plant of the Philadelphia Engineering Company for the building of cranes.

A point has been raised which has proved an obstacle to the desired consolidation. It is regarding the European situation. Our informant states that an agreement was reached between the Niles Tool Works Company of this country and the Deutsche Niles Werkzeug Maschinen Fabrik, which is now nearing completion at Niederschweide, Germany. It is said that the latter concern are largely controlled by German interests. Col. Alex. Gordon, president of the Niles Tool Works Company, it will be recalled, is general director and engineer, and among the other directors are Ernst Borsig of the Borsig Locomotive Works and Messrs. Stahl, director of the Vulcan Ship Building Company of Stettin; Loewe of the Ludwig Loewe Company, Borne of Borne & Bussie and Rathenow of the Allgemeine Electricitäts Gesellschaft, or the German

General Electric Company. The agreement referred to, it is said, will bar the Niles Tool Works Company from the European market as soon as the German concern are ready to place their product on the market. Bement, Miles & Co. are now doing a tremendous business in Europe through Schuchardt & Schütte of Berlin, Köln, Vienna, Brussels and Stockholm; Fenwick Freres & Co. of Paris and C. W. Griffins & Co. of London. This business will be forfeited if Bement, Miles & Co. become part of the Niles Tool Works Company.

Negotiations are said to be on foot for the consolidation of foundry supply manufacturers and dealers. It is said that the company will be capitalized at \$2,000,000, and that the concerns who are favorable to the project are: T. P. Kelly & Co., New York; S. Obermayer & Co., Cincinnati; J. W. Paxson & Co., Philadelphia; Buffalo Foundry & Supply Company, Buffalo, N. Y.; J. C. McCormick & Co., Pittsburgh; Cleveland Facing Mills; J. D. Smith Foundry Company, Cincinnati, and Hill & Griffin, Cincinnati.

Gould & Eberhardt of Newark, N. J., are building additions to their plant which will almost double their producing capacity. A large number of modern and special machine tools have been ordered for some time, and will soon be ready for setting up in the new shop. The plant has been running 24 hours a day for several weeks.

The National Stamping & Enameling Company, whose main offices are at 78 Beekman street, New York, are building extensive additions to their Stewart plant at Belair, and are in the market for a considerable amount of stamping machinery and power presses.

The large equipment of machinery of the Armington & Sims engine building plant, Providence, R. I., which was sold to large dealers in this city, has proved a choice morsel, and we are informed that the material has almost all been resold.

Bids were opened at the Brooklyn Navy Yard yesterday for several large antiquated second-hand tools which have been cleaned out of the several departments lately. The result of the bidding has not been made public, but we understand that several dealers were anxious to get certain tools which were included in the lot. A large planer was the best tool to be sold.

A five-story building located at 46 Dey street has been leased by the Niles Tool Works Company. It will serve as an annex to their warehouse, and is being stocked up with pressed steel pulleys from 6 to 48 inches in diameter, and of all widths of face and bores. The arrangement of the stock is excellent, and any size of pulley can be obtained in shortest possible order. The building will contain the most complete and largest stock of pulleys in existence.

The Brown Hoisting & Conveying Machine Company of 26 Cortlandt street and Cleveland are shipping a cantilever yard crane to Le Société D'Ougree of Liège, Belgium. The shipment constitutes five carloads.

George V. Cresson & Co. have booked an order for a 15-inch Buchanan crusher and three sets of 36 inch Buchanan rolls for a large crushing plant in Ontario. The company have also taken a large order for shipment to Holland.

The large boiler makers are busily engaged in preparing plans for the 32,000 boiler horse power plant for the Manhattan Railroad Company. It is now said that the company intend purchasing as soon as the data and bids have all been received. The plant will be for operating the elevated roads in New York by electricity. The plant, it is said, will be larger than either the Third avenue or Metropolitan.

It is said that the International Pump Company are receiving plans for a smoke consuming plant, to be constructed in connection with the Worthington plant in Brooklyn. The company desire to use cheap fuel and do away with the smoke entirely.

The Pennsylvania Railroad Company are figuring on an increase in the boiler capacity of their Jersey City electric lighting plant. H. S. Hayward is superintendent of motive power.

The Fuel Economizer Company of 74 Cortlandt street and Matteawan, N. Y., received an order for 500 horse-power of Green economizers from the American Hard Rubber Company of College Point, N. Y.

James G. White & Co., 29 Broadway, have placed 90 surveyors at making surveys on 13 miles of the Yadkin River, North Carolina, preliminary to and preceding the development of a hydraulic plant which will develop ultimately 60,000 horse-power. The plant will furnish power to cotton mills and towns within a radius of 40 miles, but it is possible that all or nearly all of the power will be used for the production of calcium carbide and other chemical products produced in electric furnaces. The enterprise is controlled by Dr. Dillon Brown, the New York specialist. It is considered the best hydraulic project on foot, and 18 months will be required to complete the installation of the first 30,000 horse-power.

Bids were received June 1 for the steam heating plant for the Cornell Medical College, which is being built at



First avenue between Twenty-seventh and Twenty-eighth streets.

The American Lamp & Brass Company of Trenton, N. J., are building an iron foundry, to be completed by July 1. They are calling for bids for equipment and materials.

## Metal Market.

Office of The Iron Age, 232-238 William street, {  
NEW YORK, June 7, 1899. }

**Fig Tin.**—Throughout the entire week business was very dull and demand was not more than can be expected in a retail way. Prices declined gradually, and to-day the market closed weak, with sellers at 25.45c. and buyers not above 25.35c. The London market since our last writing declined from day to day, and closed to-day easy at £116 2s. 6d. for spot and £116 17s. 6d. for three months' futures. Throughout the entire month of May, although the demand was very slight, prices here were influenced entirely by London quotation. The opening prices of the month were the highest of the year. New supplies from the Straits show a fair increase for the month of May as compared with the previous month and also with the same month last year. It seems that the high value of the article sooner or later will show its effect on the output of the Straits Settlements, from where it is reported that coolie labor is now easier to obtain than heretofore. Increased shipments from the Straits from now on would undoubtedly affect speculation abroad, to which the great advance since the beginning of the year is universally credited. The statistical position of the article has hardly justified the advance. When the fact is taken into consideration that the shipments from the Straits have amounted to but moderate quantities, the fact that the total visible supply has not further decreased is of importance. The total visible supply on January 1 of this year was 20,131 tons. Figures to-day show 20,485 tons, an increase of 354 tons over January 1. This would indicate that the year's consumption is so far fully covered by the new supplies. Below we give total statistics for Europe and the United States as compiled by the New York Metal Exchange, showing:

Total visible supply June 1, 1899.....	Tons. 20,485
Against—	
Total visible supply May 1, 1899.....	20,129
Total visible supply June 1, 1898.....	24,834

**Copper.**—Very little business is doing and quotations are still entirely nominal, with Lake Superior Ingot quoted at 18½c., Electrolytic Cakes, Wire Bars and Ingots 17½c. and Casting Stock 17¼c. The only business of any importance whatever which is reported is a fair sized shipment of Electrolytic for export. London declined with small business doing, but at the close to-day the market showed a little firmer tone, and spot was quoted at £75, while three months' futures were cabled £74 18s. 9d. Best Selected declined 10 shillings and is now quoted £79.

The high premium on Lake disappeared during the month of May. Superficially judged, the first arrivals by way of lake and canal may be given as a reason, but actually the striking absence of urgent demand and the extremely dull condition of the trade, especially during the latter half of the month, turned the scale against the hitherto unknown premium over other high grades.

The exports of domestic Copper from New York and Baltimore for the month of May, as per custom house returns, amount to 6325 tons of 2240 lbs. During the same month the following arrived at this port:

From—	
Europe.....	2,496 tons Ingots, &c.
Mexico.....	361 tons Bars.
Total exports since January 1, 1899, exclusive of	
Southern ports, for May.....	42,380 tons.
Against same period in 1898.....	54,168 tons.

**Fig Lead.**—The market is entirely nominal, and only a retail business is doing. Single carloads are quoted at 4.45c. to 4.50c.; larger lots, 4.45c. London comes a shade firmer to-day with £14 5s. as a quotation. St. Louis is entirely nominal, and is quoted at 4.30c. Arrivals at this port for the month of May were: About 4650 tons from Mexico, 24 tons from Peru, 10 tons from London. Exports in bond from this port amounted to 3398 tons 2230 lbs.

The following figures are compiled by the New York Metal Exchange from returns of the United States Bureau of Statistics:

Month of April.....	In tons of 2240 lbs.
Imports.....	4,374
Exports.....	5,320
Bonded stock, April 30, 1899.....	8,238

**Spelter.**—This metal is weak and neglected. Spot is now quoted at 6.75c., but June and July shipments are

freely offered at 6.50c. St. Louis market telegraphed at close of to-day 6.35c. to 6.45c. nominally and London declined from £28 11s. 3d. of last week to £27 10s. to-day. This is a decline of more than £1. The Ore market is dull, and we are informed from the West that a decline of \$2 per ton was made yesterday. Good to choice Ores sold from \$46 to \$49.50, but a good accumulation of stock is taking place and a further decline is anticipated.

**Antimony.**—There has been no change. Hallett's is strong and quoted at 10c., while Cookson's holds an equally firm position at 11c.

**Nickel.**—Is unchanged as to price, and the position is very firm. Sellers are still finding difficulty in procuring the metal. Canadian Nickel is quoted 38c. to 40c. for lots larger than 1000 lbs., and 40c. to 50c. for smaller quantities.

**Tin Plate.**—There is no change in price, and a fair business is reported. The American Tin Plate Company are still quoting 100-lb. Cokes, New York delivery, on a basis of \$4.05 to \$4.10. It is very probable that as a result of the conference being held in Chicago to-day, between the representatives of the Amalgamated Association and Warner Arms and T. G. Reid of the American Tin Plate Company, the wages of the Tin Plate and Sheet workers will be forced up. It is safe to predict that this will result in another advance in the price of Tin Plates.

## American Plumbers' Supply & Lead Company.

It is expected that the final transfer of concerns to complete the organization of the American Plumbers' Supply & Lead Company will be made about July 1, at which date permanent officers will be elected. Transfers of some of the concerns have already been made, and others will take place in a few days. The new company will open offices in the American Surety Building, 100 Broadway, New York, where the entire fourth floor has been secured. There will also be central offices in Pittsburgh, Chicago and Philadelphia. The officers of the new company will probably be: Francis J. Torrence, president; John Reid of the Mott Iron Works, New York first vice-president; Theodore Ahrens, Jr., of the Ahrens & Ott Mfg. Company, Louisville, Ky., second vice-president; E. H. Murdock of the Sportsmen's Shot Works, Cincinnati, secretary; B. Frank Hooper of the Colwell Lead Company, New York, treasurer. Of the \$25,000,000 capital stock to be issued at first \$10,000,000 is to be preferred and \$15,000,000 common. The promoters of the deal have optioned 36 different concerns, and of these it is said that there are several that the promoters do not care to include. The new company, it is said, will practically control the business of the country in a number of lines, and will also engage in manufacturing other lines that they do not seek to control. The Bailey-Farrell Mfg. Company of Pittsburgh have been optioned for the combine, and a deal may be closed for including them. The concerns of Pittsburgh and vicinity that have been practically secured for the new company are: The Standard Mfg. Company, Pittsburgh Supply Company, W. B. Scaife & Sons and the Mansfield Mfg. Company of Pittsburgh, and Dawes & Myler of New Brighton, Pa. In the transaction of business of the combine the identity of the constituent companies is to be maintained.

Laughlin & Co., operating the Eliza furnaces at Pittsburgh, recently made another purchase of about 4 acres of land adjoining their blast furnace plant. Other purchases made some time since by this concern give them a very large plot of ground, most of which they will use in the extensions now being made to their ore yards, the building of railroad tracks and the erection of about 800 coke ovens. When completed this firm will have one of the best blast furnace plants in the country, consisting of four modern stacks over 100 feet high, equipped with all the latest machinery, and ore yards which are complete in every way. They expect to make about 2500 tons of metal a day at these four furnaces, and at the Soho Furnace, which they recently bought.

The work of irrigation, under State control, is being inaugurated in Montana by the construction of two canals to water 100,000 acres, which will be sold to settlers. The water for the canals will be obtained from the Boulder and Bigtimber rivers. The plan under which the State will operate these canals is vested in an organization known as the State Arid Land Grant Commission, which is empowered to sell land to actual settlers not to exceed 160 acres each, the transfer being accompanied by a deed to a permanent water right.

The Keasey Pulley Company of Toledo have announced a slight advance in the price of split wood pulleys.

## QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING JUNE 7, 1899.

Cap'l Issued.		Sales.	Thursday.	Friday.	Saturday.	Monday.	Tuesday.	Wednesday
\$47,100,000	Am. S. & W., Common.....	165,732	57½-59½	59 -62½	63 -64½	61½-64	61½-63½	59½-63
38,150,000	Am. S. & W., Pref. (7% Cu.)....	6,775	94½-95	95 -96	96½-97	96½-97	95½-96½	95½-96
9,260,000	Col. Fuel and Iron.....	6,835	41½-42	41½-44½	44½-45½	44½-46½	45 -46	45 -45½
46,484,300	Federal Steel, Common.....	116,232	53½-55½	54½-59	58½-60	58½-60½	58½-59½	58½-60½
53,253,500	Federal Steel, Pref. (6% Non-Cu.)	45,667	78½-80	79½-81½	80½-82	81 -81½	81½-81½	81½-82½
20,000,000	Tennessee Coal and Iron.....	77,315	56 -58½	58½-62½	61½-62½	61½-63½	62½-64½	63 -64½
7,974,550	Cambria Iron, Phila.*.....	180	-44½	-44½	-44½	-44½	-44½	-44½
10,000,000	Cambria, Steel***.....	12,325	19 -19½	19½-19½	19½-19½	19½-20½	20 -20½	20 -20½
5,000,000	Penna. Common, Phila.....	150	.....	.....	-75	.....	.....	.....
1,500,000	Penna. Pref., Phila.....	.....	.....	.....	.....	.....	.....	.....
28,000,000	Tin Plate Common, New York..	8,274	38½-34½	34 -36½	35 -37½	36 -37	36½-37	36½-38½
18,000,000	Tin Plate Pref., N. Y. (7% Cu.)..	1,230	.....	-83	84 -84½	84½-84½	84½-85	84½-85
28,000,000	Tin Plate Com., Chic.....	3,165+	34 -34½	34½-36½	36½-37½	37 -37½	37½	.....
18,000,000	Tin Plate Pref., Chic. (7% Cu.)..	929+	-81½	82 -85	84½-85½	84½-85	84½-85	.....
32,000,000	National Steel Common, Chic.....	8,280+	43½-45	44½-47	47 -48	47 -49	49½-49½	.....
27,000,000	National Steel Pref., Chic. (7% Cu)	1,785+	87½-88½	88½-90	89½-90	89½-90	89½-90	.....
32,000,000	National Steel, Common, N. Y..	17,330	44 -45½	43½-47½	47½-48½	47½-49½	49½-49½	47½-48½
27,000,000	Nat'l Steel, Pref., N. Y., (7% Cu.)	4,120	88 -88½	88½-89	-89½	89½-90½	89½-90	89½-90
7,500,000	Bethlehem Iron**.....	660	60 -60½	.....	60 -60½	60½-60½	-60½	.....
.....	Bethlehem Steel Rights.....	2,840	-22½	.....	22½-23½	22½-22½	-23	22 -22½
12,500,000	Pressed Steel, Common.....	2,615	44½-47	46 -47	-48½	49 -49½	49 -50	49½-50
12,500,000	Pressed Steel, Pref. (7% Non-Cu.)	1,535	78 -79½	-80	79 -79½	-79½	80 -81	-82
19,000,000	Am. Steel Hoop, Common.....	5,060	26 -26½	26½-27½	28 -28½	28½-30	28 -28½	-27½
14,000,000	Am. Steel Hoop, Pref. (7% Cu.)..	3,855	73 -74	73½-74½	74 -75	74½-75	-74	-74
.....	Am. Car & Foundry, Common..	3,930	19 -19½	19½-20	19½-20	19 -19½	18½-19½	-19
.....	Am. Car & Foundry, Preferred..	2,091	61 -63	-64	63 -64½	62½-63	-63	61½-62½

\* Par \$50. \*\* 6% guaranteed by B. S. Co. \*\*\* \$1.50 per share paid in. + Exclusive of Wednesday. Late Philadelphia and Chicago sales by telegraph.

**Bonded Indebtedness:** Am. S. & W., \$730,000; Am. Tin Plate, none; Am. Steel Hoop, none; Federal Steel Co., \$13,200,000; Illinois 5%, \$7,417,000; E. J. E. R. R. 5%, \$1,600,000; Johnson 6%, \$6,732,000; D. & I. R. R. 5%, \$1,000,000; 2d D. & I. R. R. 6%, \$10,000; land grant D. & I. R. R. 5%; National Steel, \$2,561,000; Tennessee C. I. & R. Co., \$8,367,000; 6%, \$1,114,000; 7%, \$1,000,000; 7% cu. pref.; Pennsylvania Steel, \$1,000,000; Steelton 1st; \$2,000,000; Sparrow's Point 1st, \$4,000,000 consolidated, both plants; Bethlehem Iron, \$1,351,000.

## Transfer of the Daimler Mfg. Company.

We are informed on good authority that a syndicate composed of Wm. L. Elkins, P. A. Widener, George W. Elkins, George D. Widener, Sidney Tyler, Michael Ehret and Arthur Kitson acquired control of the Daimler Mfg. Company of New York.

The latter company have for some time controlled the United States and Canadian patents granted to Gottlieb Daimler, Maybach, Kuebler and others for oil motors for automobiles, launches and stationary engines. Several hundred men are now employed by the company at their works located on Long Island Sound.

The new syndicate propose building heavy motor wagons for freight service, such as brewery, express and coal wagons. These vehicles are to be driven by the Daimler oil motor.

The present works will be immediately enlarged, according to the plans of the syndicate.

The negotiations for the purchase of the Daimler Company were carried out by Arthur Kitson and Julius Meyer. Kessler & Co., bankers, 54 Wall street, New York, are represented in the purchasing syndicate.

The Pittsburgh, Bessemer & Lake Erie Railroad (Carnegie line) have given notice that by authority of the Board of Directors each stockholder of this company of record June 1, 1899, will have the privilege of subscribing for and taking at par preferred stock of the company to an amount equal to 25 per cent. of the par value of the stock held by such stockholder on June 1, 1899, and debenture bonds of the company to an amount equal to 15 per cent. of the stock held by such stockholder on June 1, 1899. This privilege is entire and the stockholder, to avail himself thereof, must subscribe for both stock and bonds. This privilege will expire on June 15, 1899, at 8 o'clock p.m., after which the stock and bonds untaken will be sold as directed by the board. The preferred stock will be entitled to dividends at the rate of 6 per cent. annually from June 1, 1899, the bonds will bear interest at the rate of 5 per cent. annually from the same date, and the stockholder will pay therefor with accrued interest from June 1, 1899, to date of his payment to the company. Notice of subscription therefor, addressed to the treasurer, must be accompanied by a check for the principal and accrued interest of the stocks and bonds taken. Scrip receipts will be issued for proportionate interests in shares of stock and bonds, which will be redeemed by the issue of stock or bonds respectively when presented in amounts equal to even shares of stock of \$50 each and to the amount of a bond of \$1000 each.

The Michigan Legislature, after a long fight, have passed a bill placing a tax of 2 cents a ton on iron ore, and of from 1-16 to 1/2 cent a pound on copper ore, according to the annual output of the respective mines. The bill will double the State revenue from iron companies and increase that from copper companies from \$100,000 to \$1,100,000.

## Iron and Industrial Stocks.

There has been a good deal of dividend talk lately and the rumors in regard to the earnings of some of the consolidations deal with very large figures. The National Steel Company have declared their first dividend of 1½ per cent. on the preferred stock, payable June 30. The Federal Steel Company, it is reported, are soon to pay 1½ per cent. on their common in addition to a like amount on their preferred. The American Steel & Wire Company are to make their announcement on the 23d inst. The talk is that the common is to get a quarterly dividend at the rate of 7 per cent. per annum. The American Tin Plate Company are said to be earning at the rate of the full dividend on the preferred and 10 per cent. on the common, while the American Steel Hoop Company are to make their first payment of a dividend on their preferred stock in July. The Tennessee Coal, Iron & Railroad Company, it is supposed, will soon make arrangements for the liquidation of the accrued and unpaid dividends on their preferred stock issue of \$1,000,000. Nothing has been paid on this for over five years.

On the 2d inst. American Car Foundry preferred was added to the dividend list by the declaration of a 1½ per cent.

Marked advances are shown in Tennessee Coal & Iron, and the other industrial stocks have also been more than usually active, prices having advanced throughout almost the whole of the above list. The three stocks named, with Colorado Fuel & Iron, show sales more than double those of last week.

Closing quotations on a number of industrial stocks are as follows:

	Bid.	Asked.
International Silver, Common.....	10½	10½
Mich.-Peninsular Car, First 5s.....	113	116
Otis Elevator, Common.....	34	35
Otis Elevator, Preferred.....	88	89½
H. R. Worthington, Common.....	50	55
H. R. Worthington, Preferred.....	112	116
Cramp's Shipyard Stock.....	80	85
Pratt & Whitney, Common.....	3½	5
Pratt & Whitney, Preferred.....	38	48
E. W. Bliss, Common.....	138	.....
E. W. Bliss, Preferred.....	125	.....
U. S. Projectile.....	90	95
Barney & Smith Car, Common.....	21	25
Barney & Smith Car, Preferred.....	90	98
Park Steel Company.....	109	.....
International Pump, Common.....	24	26
International Pump, Preferred.....	62	64
Republic I. & S., Common.....	17	18
Republic I. & S., Preferred.....	62	64
Tidewater Steel.....	9½	.....
Diamond State Steel Company.....	6½	7

During the year 1898 the arrivals of vessels in Chicago amounted to 9428, with an aggregate tonnage of 7,557,215, and the number of clearances was 9563, with tonnage of 7,686,448, making a total of arrivals and clearances of 18,990 vessels, with an aggregate tonnage of 15,243,663.

The Standard Connellsville Coke Company, owning about 100 ovens, have sold their entire interests to the National Steel Company.



## MANUFACTURING.

## Iron and Steel.

The American Steel Hoop Company of Pittsburgh, who took over the three blast furnaces of the Isabella Furnace Company, at Etna, Pa., have decided to make some extensive improvements at this plant. Two of these furnaces are 75 x 20 in size, equipped with six 75 x 21 Whitwell stoves, and the other stack is 75 x 16, equipped with three Kennedy stoves. The daily capacity of the three stacks is not over 600 tons, and it is proposed to very much increase this output. New stoves will be added, the stacks will be raised, additional tuyeres installed and the blowing capacity increased. It is not intended to blow out any of the furnaces until it is necessary to do so on account of the pressing need of the iron and the high prices at which it is selling. However, such improvements and additions as can be made to the furnaces while they are in blast will be carried on, and as it becomes necessary to blow a furnace out it will be rebuilt and blown in again as quickly as possible. It is proposed to make this plant a modern furnace plant throughout and to bring the daily capacity of the three furnaces up to 1200 tons or more.

Preparations are being made to start the plant of the Pittsburgh Tube Company, at Pittsburgh, Pa., which has been idle for a long time. The plant is equipped to make sizes from  $\frac{1}{4}$  inch up to 12 inches in diameter. The plant is owned by John L. McCutcheon of Pittsburgh, R. T. Crane of Chicago and others. Skelp will be supplied from the plant of the Keystone Rolling Mill, at Pittsburgh, which was recently started up.

The Pennsylvania Bolt & Nut Company of Lebanon, Pa., have given their puddlers another increase of 25 cents a ton, making the new rate \$3.25 a ton. Within the past two months this company have increased the wages of their puddlers from \$2.50 to \$3.25 a ton.

The Altoona Iron Company of Altoona, Pa., have increased wages of their puddlers from \$3 to \$3.25 a ton. This is the second advance made by this concern within a short time.

The Youngstown Works of the National Steel Company, at Youngstown, Ohio, are rapidly being put in shape to roll steel rails, and they expect to be in the market as producers by July 1.

Phoenix Furnace, at Youngstown, Ohio, formerly belonging to the Brown-Bonnell Iron Company, but recently taken over by the Republic Iron & Steel Company, is being prepared for blast and will be started as soon as possible. The furnace has been idle for a long time. It will probably run on mill iron, to be used in the Youngstown mills of the Republic Iron & Steel Company.

The Minerva Furnace of the Minerva Iron Company, Milwaukee, Wis., is to be blown in the current week.

The South Chicago Furnace Company will blow in their Calumet Furnace about the middle of this month.

The Olive Furnace at Lawrence, Ohio, is to be blown in June 19.

The Bloom Furnace was blown in May 22 by the Clare Iron Company, Bloom Switch, Ohio.

The Belfont Furnace at Ironton, Ohio, was blown out for relining on May 30.

The Goshen Furnace, at Goshen, Va., belonging to the Empire Iron & Steel Company, is expected to be blown in August 1.

The Bellefonte Furnace, at Bellefonte, Pa., leased to the Empire Iron & Steel Company, was blown in May 31. This furnace was formerly known as the Valentine Furnace.

Production in May at the works of the Pennsylvania Steel Company, Steelton, Pa., was the largest in the history of the company. Improvements and additions are being made in almost every department of this great plant, and in a few months the output will be very much increased.

The Cambria Steel Company, at Johnstown, Pa., paid out on Saturday, June 3, \$191,000 in wages. The best previous record was a few weeks ago, when \$178,000 was paid out. The Cambria Steel Company have over 8200 men on their pay rolls.

Phillips, Nimick & Co., operating the Sligo Rolling Mills, at Pittsburgh, are considerably increasing the capacity of their plate mills.

A steel plant is to be built at Iron Gate, Va., by the Richmond Standard Spike & Iron Company. A mortgage of \$1,500,000 made by the company has been recorded. J. F. Pierson of New York is the president. The new company is styled The Richmond Standard Steel Spike & Iron Company.

The charter of the Low Moor Iron Company has been extended for 30 years from June 13, 1903, and authority has been given to increase the capital stock from \$1,000,000 to \$10,000,000.

At a recent meeting of the board of directors of the Reading Iron Company, at Reading, Pa., it was decided to make a further advance in wages of employees, to take effect June 15. This is the third increase that has been made by this company in the past six months. It will amount to about 5 per cent. on present basis.

The old Alcalde Furnace at Rusk, Texas, was blown out June 1. It will be started up again in about six weeks.

## Machinery.

Robert Poole & Son Company, Baltimore, Md., have just shipped a large lot of machinery to the order of the Koltschugin Brass & Copper Rolling Mill of Moscow, Russia. The machinery consisted of rolls, gearing and shafting for a rolling mill plant, valued at over \$30,000.

The Powell Planer Company, a corporation organized under the laws of the State of Massachusetts, and located in Worcester, have by the authority of the Commissioner of Corporations changed their name and adopted the name of Woodward & Powell Planer Company, which shall hereafter be their legal name. This corporation are under the same management to-day that existed when they first were incorporated, in 1887.

The Indianapolis Drop Forging Company, Indianapolis, Ind., write that they have recently augmented their manufacturing capacity by the introduction of a number of new machines and the building of an addition of 55 x 125 feet to their plant, besides increasing their operating force, which are given employment 10 hours a day. The demand for their product has been especially good and a number of large shipments were recently made.

Judging from the sales recorded by manufacturers of steam governors, the demand for simple engines has not suffered a decrease. The Gardner Governor Company, Quincy, Ill., advise us that during the months of March and April they made actual shipment of 2500 Gardner governors. The company have been awarded a contract by the Alabama Steel & Wire Company, Birmingham, Ala., for two 16 x 10 x 12, two 12 x 7 x 12, two 10 x 6 x 10 and two 8 x 8 x 10 Gardner duplex steam pumps for use in the new plant being constructed for the Wire Company.

Prentice Brothers Company, Worcester, Mass., have just completed a brick addition to their shop 140 x 40, two stories and a half high. This is connected with their other factories and will be used for the general extension of their facilities, will be equipped at once, and will have electric power and latest appliances. This concern report a large and continuous increase in their business, both foreign and domestic. The increase in domestic orders has been particularly noticeable of late.

Forster, Waterbury & Co., well known to the Western Iron trade for many years as the selling agents for Iroquois pig iron, are making arrangements to enter upon the manufacture of malleable and gray iron castings. They have purchased about 10 acres of land at Franklin Park, Ill., located at the junction of the Chicago, Milwaukee & St. Paul and the Wisconsin Central railroads. They also will have connection with the Chicago Terminal Transfer and the Chicago Junction railroads. Plans and specifications have been prepared for the erection of buildings and the installation of the necessary equipment to produce annually from 8000 to 10,000 tons of castings. Construction will be commenced immediately, and it is expected that the works will be in operation about the first of next August. Among the specialties they will manufacture will be wagon skells, the Waterbury patent vehicle steel wheels, steel fence posts, and malleable link belting. The plant will be equipped also to make general, agricultural and car malleables. The city office will be located at 355 Dearborn street, Chicago, in rooms 1200 and 1201.

The Kansas City, Pittsburg & Gulf Railroad Company have decided to make a large addition to their shops at Pittsburg, Kan. A great deal of new machinery will be installed, and the plant will be of much more importance than before.

Among recently licensed corporations in Illinois is the Cornell Machine Company, at Chicago; capital stock, \$150,000; manufacturing engines and all kinds of machinery; incorporators, Charles B. Cone, M. J. Okelly, W. B. Ward.

Work is being pushed on the construction of the new steel car works of the Pressed Steel Car Company, at McKee's Rocks, Pittsburgh. Work on the superstructure has been commenced by the Riter-Conley Mfg. Company of Pittsburgh, who have the contract for all the buildings. The dimensions of the various buildings were given in these columns some time since. With the completion of this new works, the Pressed Steel Car Company will have a capacity for turning out about 80 steel cars per day.

The Standard Scale & Supply Company, Limited, Pittsburgh, manufacturers of the Standard scales, are at present adding to their works at Bellefonte, Pa., additional buildings to all their departments. When the improvements now under way are completed this concern will have an additional floor space of 15,000 square feet. This additional space will enable the firm to treble their production, which is necessitated by the rapid growth of their business. They are extremely busy, especially on heavy class of goods, such as railroad, wagon and mine scales, having received recently orders for a large number of these, one of 150 tons capacity. Contracts for all the machinery for the improvements noted above have been placed.

The Lloyd Booth Company, founders and machinists, of Youngstown, Ohio, are building a new machine shop 45 x 65 feet.

The Albany Boiler Works Company, Albany, N. Y., have

bought out the Franklin Iron Works of Green Island, N. Y., negotiations having been going on since the Albany plant was burned down May 11. The purchase price was \$75,000. The new firm will be known as the Franklin Boiler Works Company, and it now has orders enough ahead for six months, with night and day forces. H. L. Van Zile is president of the new concern, and Frank Chrysler is treasurer and general manager.

The We Fu Go Company, manufacturing engineers and chemists, Cincinnati, have erected an enlarged water softening plant for the Weir Frog Company, Cincinnati, Ohio, making their capacity 48,000 gallons. Also an enlargement for the McDougall Steam Laundry of Denison, Texas, capacity 14,400 gallons. An enlargement for the Brenham Compress, Oil & Mfg. Company of Brenham, Texas, capacity 72,000 gallons. They have also put in a water softening plant for the Beckett Paper Company of Hamilton, Ohio, capacity 33,600 gallons. For Westinghouse, Church, Kerr & Co. they have put in a water softening plant at the Galesburg Artificial Ice Company, Galesburg, Ill., capacity 28,800 gallons. For the Peerless Laundry, Carthage, Mo., a plant having a capacity of 7200 gallons. For the Temple Cold Storage & Ice Factory of Temple, Texas, capacity 19,200 gallons.

The Litchfield Car & Machine Company, Litchfield, Ill., have just shipped three large rope haulage plants complete to the Pittsburgh & Conneaut Dock Company, at Conneaut Harbor, Ohio, to be used in moving ore cars in place of switch engines; also are just completing two hauling winches and one hoisting winch for the Government, one pair of 20 x 36 inch hoisting engines for a mine at Witt, Ill., two pairs of 14 x 24 inch hoisting engines for Missouri, and a carload of mining machinery for the Sand Coulee Coal Company of Cottonwood, Mont. They have orders enough ahead to keep them busy for some time.

#### Bridges.

The Pottstown Bridge Company of Philadelphia and Pottstown, Pa., have been granted a charter of incorporation, with a capital of \$300,000. The incorporators are A. W. Mellon of Pittsburgh, C. S. Hall of Wilmington, Pa.; Walter Page, Samuel Kane and W. J. McCoughlan, all of Philadelphia.

The Carnegie Steel Company, Limited, of Pittsburgh, have received an order for considerable bridge material for the Great Northern Railway. The material will be used for the construction of small bridges along the lines of the company.

#### Hardware.

The Hill, Whitney & Wood Company, Waltham, Mass., manufacturers of aluminum castings, cooking utensils, sheet metal work and novelties, advise us that business in their various departments has increased very rapidly of late, and that they have been constantly adding men to keep up with their orders.

The Consolidated Fruit Jar Company of New Brunswick, N. J., have recently placed an order with the W. J. Clark Company of Salem, Ohio, for a large number of sheet steel barrels, having found such barrels more economical for use in and about their works than wooden ones. The Clark Company also shipped last week in one lot 1500 tote boxes to the American Steel & Wire Company.

The Ohio Knife Company, Cincinnati, Ohio, manufacturers of machine knives, shear blades, fly bars and bed plates, are exceptionally rushed at present, having orders ahead for 60 days and running 70 hours a week. The exaggerated report in some of the daily papers about their burning out was entirely without foundation, as the loss was but trifling. The company say they are turning out orders on time and will continue to do so.

The Anthony Wayne Mfg. Company write that they have improved their rotary washer and are just placing same upon the market. They have also under way another machine which will be a decided improvement upon the St. Louis and a number of other new styles of washing machines have been added to their already extensive line. The working force has been increased by 20 per cent, running 10 hours a day. Both factories, that at St. Louis and the one at Fort Wayne, have been crowded with orders, making it almost impossible to supply the demand for the newer machines.

#### Miscellaneous.

St. Louis is taking a position in the new field of automobile carriage construction, and extensive preparations are under way by the St. Louis Motor Carriage Company for a generous share of the business. They are building a three-story brick factory 40 x 115 feet at 1211 and 1213 North Vandeventer avenue, St. Louis, and are already occupying the first floor, which will be used exclusively for machine shop and assembling department. The second floor will be devoted to the body work and trimming of vehicles, while the painting and finishing will be confined to the third floor. The gasoline motor is the invention of the vice-president and superintendent, Mr. G. P. Dorris, who formerly conducted a machine shop at Nashville, Tenn.

The Empire Light & Power Company, Quincy, Ill., are making some extensive additions to their present well equipped plant. The frontage of the buildings has been extended 25 feet, giving them now 75 feet by a depth of 114 feet. A 375 horse-power Heine safety boiler has been installed, bringing the steam power to a total of 1000, and consisting of three Heine boilers, which will be served by a 10 x 7 x 10 Gardner duplex steam

pump. A Russell 1200 horse-power cross compound engine will be coupled direct to a 600-kw. three-phase General Electric Company's generator at 150 revolutions per minute.

The Bellefontaine Hame & Tool Company, Bellefontaine, Ohio, succeeding the Woolman-Knight Mfg. Company, report the trade conditions in their line as greatly improved since the first of the year, so much so as to necessitate an increase in their operative force. They are at present running nine hours a day.

The Rome Brass & Copper Company, Rome, N. Y., have placed an order for the steel buildings for a large brass plant with the Berlin Iron Bridge Company of East Berlin, Conn. The contract comprises a boiler house and an engine house 40 feet wide and 120 feet long; a casting shop 50 feet wide and 90 feet long, and a tube mill 120 feet wide and 200 feet long. The framework of all these buildings is steel. The roofs have a flat pitch covered with tar and gravel, and the sides are arranged with a quantity of glass supported on steel framework. The buildings are modern in arrangement and construction and absolutely fire proof.

The 16 x 16 Buffalo Forge Company center-crank class A engine, running in oil, winner of the gold medal awarded for the best high speed engine at the Omaha Exposition, has been purchased by B. O. Ellis Company, electrical engineers, of New York City, for the Bowery Bay Building & Improvement Company, North Beach, Long Island.

The fine plant at Aurora, Ill., operated by the Hercules Iron Works until their failure some years since, has been purchased by the Akron Mining, Milling & Mfg. Company, manufacturers of paints, who will remove their business to that point from West Pullman, Ill.

The stockholders and directors of the Cumberland Steel & Tin Plate Company met in Camden, N. J., on June 1 and elected the following officers: President, H. H. Dickey, formerly the secretary of the company; vice-president, W. M. Gordon, formerly receiver of the Pottstown Iron Company; treasurer, Edward Bailey, now president of the Harrisburg National Bank; and secretary, Wm. C. Dickey, now located in the New York office of the Cambria Steel Company.

The W. A. Wood Mowing & Reaping Machine Company of Hoosick Falls, N. Y., are about to make an especially heavy shipment of agricultural implements to France. The April exports amounted to nearly a quarter of a million dollars. The demand for the machines of this company from the foreign trade is very great this season, and it is said will be the largest in the history of the company. In fact, the company state that they will not be able during this manufacturing season to fill all the orders they have received, not only abroad but in this country.

The Hampden Emery & Corundum Company, Chester, Mass., are very much behind in their orders for both their Chester and Southern Corundum, and are enlarging in all departments as fast as possible that they may meet the demands on them, which are constantly and rapidly growing. The company have recently placed an order for a 10-ton 100 horse-power boiler and several new washers for their mills, and will soon place a rotary roaster with double the capacity of the present one in mill No. 3 to roast 10 tons daily. A 40 horse-power boiler with air compressor and air drills is to be put in the Melvin mill, and exertions will be made throughout the works to double the output of the manufactured emery, bringing it up to the neighborhood of 400 tons a month before the summer is over. The company expect that with double the output they can about take care of their trade.

The Wheeler & Wilson Mfg. Company are making extensive improvements in their plant, and have placed the contract with the Berlin Iron Bridge Company of East Berlin, Conn., for a new foundry building, and also for a one-story building covering a portion of their present yard.

The Wm. B. Pollock Company of Youngstown, Ohio, have recently completed a steel stack at the Youngstown works of the National Steel Company, 220 feet high.

The Reineke-Wilson Company of Pittsburgh have been granted a charter of incorporation with a capital stock of \$200,000. This new concern take over the business of Reineke, Wilson & Co. of Pittsburgh, wholesale dealers in gas appliances, pumps and plumbers' supplies. Officials have been elected as follows: Henry Reineke, president; Robert Munro, vice-president, and Roland S. Wilson, secretary and treasurer. The company maintain stores on Wood street, Pittsburgh, and also on Baum street, in the East End. They have recently secured additional buildings at 17 and 19 Wood street, which gives them four three-story buildings on this street, and a combined frontage of 80 feet.

The Kentucky Fire Brick Works of Portsmouth, Ohio, have orders on their books for fire brick for six blast furnace linings, and about 2,000,000 hot blast stove brick. The works of this concern, it is stated, ran full time through the dull periods of 1895-'96-'97. In 1898 the trade of the concern was so large that they increased their capacity about 50 per cent., and the enlarged plant is now running night and day. The works are located at Firebrick, Lewis County, Ky. Specialties are made of blast furnace, stove, cupola and rolling mill brick, and the brands are Kentucky Steel, Franklin Crown and Sligo.

The Monongahela & Ohio River Transportation Company of Pittsburgh have been granted a charter of incorporation, with a capital of \$50,000. The directors are Frances J. Torrence and



J. W. Boyd of Allegheny, Pa.; George W. Darr, Wm. I. Mustin, John W. Grove, Jos. F. Grimes and Charles F. Foster, all of Pittsburgh. The new concern proposes to engage in the building of ships, vessels and boats.

The structural steel work for the changes in the Cyclorama Building, which is to be used as a stable for the New England Electric Vehicle Company, has been contracted for by the New England Structural Company of Boston. They are to supply the two or three hundred tons of material required from the stock which they carry at their works at East Everett, Mass.

The plant of the Edwin Bell & Sons Company, on the South Side, Pittsburgh, manufacturers of nail kegs, was destroyed by fire Monday night, June 5. The damage is estimated at \$25,000, partially covered by insurance.

## Trade Publications.

**Pneumatic Tools.**—The Standard Pneumatic Tool Company, Marquette Building, Chicago, have issued catalogue D, which treats of the new Little Giant drills, boring machines, hammers, blow off cocks, flue cutters, reversible flue rolling machines, riveters, stay bolt cutters, chain hoists, &c. The variety of work to which the Little Giant pneumatic principle has been adapted is shown to be very great. Photographic reproductions are presented, illustrating these uses and demonstrating the advantages of the tools in general machine and boiler shop practice. They are shown in open work and close quarters, doing heavy service and light operations. An interesting performance is a Little Giant drill used as a motor, running a car journal turner, operating with the truck in its place under the car. The catalogue comprises 40 pages and is a beautiful specimen of printing and engraving.

**Gas and Gasoline Engines.**—The Witte Iron Works Company, Kansas City, Mo., have issued a fine catalogue of the Witte gas and gasoline engines. These engines have been in use for ten years, during which they have won for themselves a high reputation. They are built in parts in the same manner as the best of steam engines. All parts are made on the interchangeable system by templates, so that quantities are turned out at the same time, not only securing large production but also ease in repairs. The type of engine built is the four cycle—namely, with four strokes—as follows: Suction, compression, explosion and exhaust. The power is obtained without the use of screens, vaporizers, carbureters, &c., the gas or gasoline being measured by a valve and instantly admitted to the cylinder. In using gasoline or other liquid fuels all but  $\frac{1}{2}$  pint is kept out of doors and underground, whence it is pumped as needed by a small bronze pump. Illustrations are given of small and large engines, of the engine in the middle of a suction stroke, of the entire valve motion, the igniters, the bed castings, the cranks, &c., thus setting forth all the details. The Witte geared hoister is also shown, for use in hoisting from mines, built up to 40 horse-power.

**Band Rip Saw.**—A circular from the Egan Company of Cincinnati, Ohio, describes their new automatic band rip saw. The column is very heavy, cored, perfectly free from vibration and the machine takes 24 inches between the fence and the saw blade, and material up to 9 inches thick. The table is of ample size and has at the front a plainly stamped index. Idler rolls are fitted in the table to remove friction. A cam lever releases, moves and clamps the fence, accomplishing the adjustment of the fence more quickly than by any other means yet devised. The wheels are 42 inches in diameter, entirely of iron and steel, the upper designed light, yet strong, with spokes; the lower heavy and with solid web, circulating less dust and giving increased momentum to the lower wheel, so that its speed governs that of the upper, preventing the upper wheel overrunning the lower. The wheel shafts are especially heavy, of steel, running in extra long bearings; the upper wheel fitted with their new improved straining device. This straining device (controlling the upper wheel and the path of the saw blade on the face of the wheels) is new and very sensitive and has a forward, backward and also a side adjustment. It is regulated by an adjustable weight and a compound lever so sensitive that no matter what the vibrations are the strain takes up the slack in the blade instantly, adding wonderfully to the perfect working of the machine and the life of the saw blades. There are three speeds of feed, 60, 90 and 135 feet per minute. Faster feeds will be furnished where desired. The feed is very powerful, the driven feeding in and feeding out rolls placed close together, enabling short stock to be worked to advantage. They are adjustable up and down instantly by means of a long lever above and convenient to the operator, or they may be raised from the board, instantly stopping the feed, or lifted instantly out of the way for use as a hand feed rip saw, all

of which may be accomplished by a single movement of the lever. Hand wheels and levers are in easy reach of the operator for stopping and starting the machine or the feed, adjusting the wheel, &c.

**Pneumatic Tools.**—The Chicago Pneumatic Tool Company, Monadnock Building, Chicago, have brought out a special edition of their No. 6 catalogue, which treats of the Boyer and New Boyer pneumatic hammers. The catalogue is magnificently illustrated, photographic views being given of numerous methods of using these pneumatic tools in shops and in field work. Full descriptions are given of the tools and their method of construction. The catalogue comprises 100 pages.

## Iron Felt.

A new insulating material, to which the name of iron felt has been given, and which is made at the Aldershof Works, near Berlin, Germany, is said by the *Iron and Coal Trade Review* of London to be coming into extensive use in Europe. The felt is described as consisting essentially of long and strong woolen fibers, impregnated with a by-product of petroleum, and then coated (with a certain amount of penetration) by a gelatine rendered insoluble, and also (alternatively or in addition) with india rubber, afterward vulcanized. After being subjected to considerable pressure the iron felt assumes the form of plates, measuring 2 square feet and upward, with a thickness varying from 13-32 inch to 2 inches. These plates are very elastic, being practically imperishable, while they will stand a pressure of 20,736 pounds per square inch, and their surface is so hard as not to be cut by the sharp edges of bolt heads or of iron girders. Placed as a cushion between rails and their chairs, or sleepers, underneath plunger-blocks or between engines and their foundations, this substance is also stated to prevent vibration.

**Empire Steel & Iron Company.**—Within the past two weeks the Topton and the Valentine furnaces of the Empire Company have blown in and are running successfully. This makes eight of the ten furnaces of the company in blast. The remaining two are the Victoria in Virginia and one Crane at Catasauqua, Pa. The Victoria will start July 15. The Crane Furnace, with present equipment, can only blow three of the four furnaces belonging to the property.

Wm. Tod & Co., engineers, founders and machinists, Youngstown, Ohio, have an order from the Youngstown Steel Company for a blowing engine, with 80-inch steam cylinders, 84-inch blowing cylinders, 60 inch stroke, to run as low pressure in connection with one of the high pressure engines which they now have.

The American Steel & Wire Company have placed an order for a new blooming mill to be installed in the Bessemer steel plant of the Shoenberger Steel Company, at Pittsburgh, which they recently took over entire. The present output of this plant is about 500 tons of billets per day, but it is the intention to increase this to 1000 tons per day. The plant is running on rod billets, which are being sent to the works of the American Steel & Wire Company, at Rankin and Braddock.

At the closing session of the Amalgamated Association at Detroit, Mich., last week officers were elected as follows: President T. J. Shaffer and Secretary-Treasurer John Williams were re-elected unanimously. M. F. Tighe of Wheeling was chosen as assistant secretary. President Shaffer appointed Ben I. Davis of Cambridge, Ohio, to the new position of assistant president. The other officers are as follows: Trustees, John Pierce of Pittsburgh, Pa.; John H. Morgan of Cambridge, Ohio, and George Pate of Youngstown, Ohio; vice presidents, First district, David Rees of Pittsburgh, Pa.; Second district, Walter Larkin of Martins Ferry, Ohio; Third district, John Ridd of Newport, Ky.; Fourth district, John Williamson of Joliet, Ill.; Fifth district, W. H. Evans of Elwood, Ind.; Sixth district, John F. Ward of Youngstown, Ohio; Seventh district, William M. Gibson of Gate City, Ala., and Eighth district, John W. Marshall of Ellwood City, Pa.

The discovery is reported of a large field of anthracite coal at Vallecitos, near Santa Fé, N. M. It is said to be near the line of railroad and easily accessible. Development work has been already begun.

It is reported that the American Steel & Wire Company have recently bought a very large tract of coal land in the Connellsville region, consisting of 3500 acres.

# HARDWARE.

## Condition of Trade.

THE market is in such a state that advances are being steadily made as one line after another responds to the general upward tendency in sympathy with the course of Iron and Metals and the heavy demand. It will be seen that several advances are announced in the following columns. In a good many lines manufacturers are revising costs and preparing for the announcement of new prices. Some, however, are determined to refrain from changes until absolutely necessary, expressing the opinion that it will not be long before a reaction from the present high tension sets in. Most merchants and manufacturers, however, are putting off to a somewhat more distant date the slump which they regard as inevitable sooner or later, and are endeavoring to take full advantage of the active business which is doing and the opportunities presented of making substantial profits.

Chicago.

(By Telegraph.)

The demand for Shelf Hardware shows no abatement. Advancing prices have no adverse effect, but each advance on the contrary seems to stimulate the demand a little more. Experienced observers look for greater surprises in this respect after July 1 than the trade has yet seen. They point out the fact that the raw materials used by manufacturers of Hardware Specialties have advanced 50 to 100 per cent., and that labor is dearer, while the finished products have so far only been marked up 10 to 20 per cent. These conditions will have to be equalized. The advance of \$5 per ton on Wire and Wire products has been accepted by the trade and put in immediate force without special comment, as if it was quite an ordinary thing. Sheets are likely to be a little easier to obtain as the mills are beginning to solicit business, which is an indication that the proposed consolidation has not been accomplished. Wire Cloth is firm at \$1.50, and even at that price the jobbers are unable to get enough to supply the demand. Carriage Bolts are now quoted by jobbers at 65 off. The scarcity of all kinds of goods is a serious matter. Much more business could be done if the merchandise was available, but it cannot be obtained fast enough. Heavy Hardware jobbers report their trade as very large, with all manufacturers behind on deliveries. Jobbers say they are almost ashamed to look at their back order books, so much material being due to their customers which they cannot get from mills. They predict a heavy trade through the summer months, because manufacturing concerns will have to draw on their stocks to help out shortages in mill deliveries.

St. Louis.

(By Telegraph.)

Five dollars per ton or 25 cents per 100 pounds has been added to price of Wire and Wire Nails. Butts and Hinges are reported firm at the new prices. Builders' Hardware holds up well under the heavy advances and all lines of Shelf Hardware show better prices. The famine in Screen Wire continues and is aggravated by the sales during the past few days. Screen Doors and made up Window Screens are seen to move heavily. Refrigerator stocks are being badly broken and are a class of seasonable goods not quickly replaced. Lawn Mowers, which have had extraordinary attention and

were scarce here, are now in better supply and selling continues freely. Reports from the agricultural districts were not so favorable last week, but this week brings a better feeling and orders have been unusually heavy by mail. The good business continues and salesmen returning to headquarters to post up for fall trade state outlook for fall as excellent. As June shows no reaction in prices, it carries with it renewed confidence. The skepticism advanced in the past as to higher prices has given way to a conviction that the conditions at present surrounding us have come to stay. Axes are reported as scarce and not likely to be abundant later in the season. Among other things, higher figures are asked for Manila and Sisal Rope. Salesmen's instructions are not to enter orders for deferred shipments. Dealers who are urging jobbers to hurry shipments do not seem to appreciate the great rush manufacturers are having. Fall goods are in advanced call, and, generally speaking, the entire trade is in good condition. The Heavy Hardware trade having stocks in dry rooms have good cause for congratulation, as timber is not being brought to mills in quantities to supply the demand.

From Arthur Brittan.

To the Editor: It seems, in expressing my views on the present condition of trade, almost impossible to avoid repeating the same old story so often told during the few past months. But we still are in it, and it is growing better and better. Experience and a fair knowledge of our surroundings teach us that the greater value placed on comparatively a few articles is nothing in comparison with the advance that will ere six months have passed be placed on all other lines.

There are always croakers who never know a good thing, will at least never acknowledge it, yet always know it cannot last. But the great majority acknowledge we are enjoying the greatest prosperity, and feel assured it will last yet many months.

We have been seeking lower values so long that we hardly realize that the few advances yet made are but the beginning. Manufacturers, fearful of losing a customer, allowed large lines of goods to be contracted for at old values, on which they have lost money, and in many cases they even now follow up the advance so slowly that they do not produce the goods at any profit. Some learn slowly, some never, but ere long manufacturers will want better prices, and the general lines will yet advance.

I am now selling large lines of goods that must and will before the fall trade is over advance 25 per cent., and many more I know nothing of will follow. The opportunities to buy goods that are now even below cost of production are good and by no means past.

Manufacturers are still unable to fill orders taken, or to satisfy the demands of their customers. Jobbers are doing business to their fullest capacity. Retailers say that their sales in May of general Hardware have been the largest in their history.

Early in the year the jobbers looked happy and boastful of their purchases and the profit they had in the value of same at market prices over prices they paid. Now some of these are giving me conundrums. "If I buy a line of goods at 2 cents a pound, sell same at our usual profit, then buy same again at higher price even than I sold at and so repeat, where shall I land?"

Oh, go on, make your profit on each transaction, and trust to luck and all will be well. I remember just before the war I bought 100 bales of cotton, later sold out at



a good profit. After I had sold cotton went up, so I took money I received for 100 bales and bought 50 bales, which I, in turn, sold for good profit; then after still a greater advance I used the entire amount I received for the 50 bales to buy ten bales.

Now at this time I often felt what a fool I was to sell that first 100 bales. Had I not I would have been worth ten times as much. But later I sold my ten bales at good price, accepted a check on a bank, which "busted" before I got home, and I never could figure out my profits on the deal, but always felt relieved when I remembered that I only lost the ten bales and not the 100 bales.

Yet my advice is, let these calculations rest. Make hay while the sun shines. Have confidence in your better judgment, and remember your party in politics cannot do you any harm for at least a good year more.

**From William P. Bissell.**

*To the Editor:* The wholesale Hardware dealers all report favorable conditions with regard to trade at the present time. There are certain lines of heavy goods on which the sale has not been in excess of former seasons, but taking Shelf Hardware in general, the sale during the past few months has been exceedingly satisfactory, particularly so in Builders' Hardware and Mechanics' Tools. On these lines it is the best that has been known for years, and it is continually on the increase.

Throughout the territory that I am familiar with the crop conditions are most excellent. The price of grain is improving, and those competent to judge predict "Dollar Wheat" in the near future. If this should prove to be a fact in the face of a good harvest, it means to this section a very active fall trade. At the present time the indications are most excellent for a prosperous business during the balance of this year, all of which we hope may be verified to the fullest extent.

**From Charles H. Wier.**

*To the Editor:* Notwithstanding June is considered a dull month jobbers are placing their orders with confidence in the stability of prices for the coming season.

There is every indication of a good fall trade. The agricultural prospects are bright, factories are full of orders. Wages are more remunerative than for many years, employment steady and an active demand for labor. These conditions mean prosperity.

Merchants are disposed to make a profit based on present cost, and are realizing to a considerable extent the benefit of an advancing market, availing themselves of the present opportunity to even up as far as possible some of the unprofitable years of the past.

Altogether, the indications are more promising than for many years.

There is considerable complaint of the scarcity of goods and the difficulty of getting orders filled within a reasonable time. This condition must be expected as long as the present scarcity of material (Iron and Steel) continues, the effect of which will be higher prices.

### Notes on Prices.

**Wire Nails.**—An advance of 25 cents per keg was put into effect June 1 by the American Steel & Wire Company. This is in sympathy with the course of the market in the raw material, an intimation of the advance having been made in our last issue. The manufacturers' quotations are therefore as follows, f.o.b. Pittsburgh:

To jobbers in carload lots.....	\$2.35
To " " in less than carload lots.....	2.37½
To retailers in carload lots.....	2.45
To " " in less than carload lots.....	2.55

There has not been during the period covered by these successive and large advances entire uniformity in the jobbers' selling prices, and many merchants have been able to obtain concessions from regular quotations. This will probably continue under the advance just announced, but it should be borne in mind that jobbers are following the advances more closely than has been usual, and the manufacturers are urging their customers to refrain from cutting.

**New York.**—There is a liberal movement of Nails in the New York market, and the advance of 25 cents per keg noted above has gone into effect. New York quotations therefore are as follows:

To retailers, carloads on dock.....	\$2.55 to \$2.60
To " " less than carloads on dock.....	2.75
Small lots from store.....	2.75 to 2.85

There is not entire uniformity in the prices for small lots from store, \$2.85 per keg being the regular price, but some of the merchants are selling at \$2.75 or \$2.80.

**Chicago, by Telegraph.**—An advance of 25 cents per keg was made on the 1st inst. This makes the prices of single carload lots the equivalent of \$2.60, Chicago. Jobbers quote small lots from stock at \$2.70. Manufacturers report a heavy business for the week, considerable of it at the advance, as still higher prices are feared. Jobbers also have enjoyed an exceedingly good trade, the advance being cheerfully accepted.

**St. Louis, by Telegraph.**—The new prices of this week, amounting to an advance of 25 cents per keg, are reported as causing no check in the good business being entered. Carload lots are now named at a price equaling \$2.55 at St. Louis. Jobbers quote single cars at \$2.65, base, and small lots at \$2.75, base.

**Pittsburgh.**—The American Steel & Wire Company have made another advance of 25 cents a keg on the price of Wire Nails, taking effect June 1, thus further emphasizing the complete control of the market by this concern. We are advised that there is a heavy demand for Wire Nails, the advances in prices not interfering with consumption to any great extent. In view of the high rates in raw materials and in finished articles as well, it is expected that still higher prices for Wire Nails will be made. We quote: To jobbers in carload lots, \$2.35; to jobbers in less than carload lots, \$2.37½; to retailers in carload lots, \$2.45; to retailers in less than carload lots, \$2.55, all f.o.b. Pittsburgh, with freight to destination added.

**Cut Nails.**—An advance of 15 cents per keg has been made in Cut Nails in the Eastern territory, and quotations are firm as follows, f.o.b. Pittsburgh, with freight added to destination:

To jobbers in carload lots.....	\$2.00
To " " in less than carload lots.....	2.05
To retailers in carload lots.....	2.05
To " " in less than carload lots.....	2.20

Many of the mills report difficulty in getting sufficient raw material to cover their needs.

**New York.**—There is a good movement of Nails, and the market has an excellent tone. Merchants generally demur but little in view of the advanced prices. Quotations are as follows: Carload lots on dock, \$2.15 to \$2.20; small lots from store, \$2.30 to \$2.35.

**Chicago, by Telegraph.**—Jobbers report considerably increased trade latterly, but the business seems to be coming from those who regularly buy Cut Nails and is not stimulated by the much higher price of Wire Nails. Small lots are now held at \$2.

**St. Louis, by Telegraph.**—The base figure remains at \$2 out of stock, but it is said that an advance equal to that on Wire Nails is contemplated.

**Pittsburgh**—The manufacturers of Cut Nails have made an advance in prices corresponding to that made on Wire Nails, and we now quote Cut Nails at \$2 in carload lots and \$2.10 in less than carload lots, f.o.b. Pittsburgh. It is stated that there is a good volume of business in Cut Nails, the mills being operated to full capacity to meet the demand. It is not unlikely further advances in price of Cut Nails will be made, in view of the very high prices ruling for raw material.

**Barb Wire.**—An advance of 25 cents per 100 pounds was announced by the manufacturers under date June 1. The prices are therefore as follows, f.o.b. Pittsburgh:

To jobbers in carload lots, Painted.....	\$2.45
" " " Galvanized.....	2.55
" " " in less than carload lots, Painted.....	2.47½
" " " " Galvanized.....	2.97½
To retailers in carload lots, Painted.....	2.55
" " " Galvanized.....	3.05
" " " in less than carload lots, Painted.....	2.65
" " " " Galvanized.....	3.15





**Glass.**—A circular letter has been sent to the buyers of Window Glass throughout the country by James A. Chambers, president of the American Glass Company, in which a special rebate is offered to all customers who give the company their entire trade from September 15, 1899, to July 1, 1900. The amount of the rebate is not mentioned and it will not be paid until after July 1, 1900. This action is regarded by jobbers as the initial move on the part of the combine to control the Glass trade of the country. Members of the Window Glass Workers' Association believe this is a direct move to injure the co operative and independent Window Glass plants of the country. An advance in prices commencing about July 1 is rumored to take place. The workers have voted to start the next fire September 15 and the association manufacturers may be depended upon to make as late a start as possible. It is estimated that even if the new combine is a success it will not control over 80 per cent. of the productive capacity of the country. The 20 per cent. outside may, however, be able to force an early start. The American Window Glass Association's prices are as follows:

Districts.	A.	B.	C.	E.
5000 boxes or more.....	85 & 5	85 & 5	.....	85 & 5
Carloads.....	80 & 20	80 & 20	85 & 2½	80 & 20
3000 boxes or more.....	85	85	.....	85 & 2½
1000 boxes or more.....	.....	.....	85 & 10	.....

These prices are subject to freight allowance.

**Paints and Colors.**—*White Lead.*—The demand for White Lead in Oil keeps up in a satisfactory manner, with no change in prices. With favorable weather the outlook for a large consumption during the month of June is encouraging. Prices are as follows: In lots of less than 500 pounds, 6¼ cents; 500 pounds and over, 5½ to 5¾ cents per pound.

**Oils.**—*Linseed Oil.*—On May 31 crushers reduced the price of city Raw Linseed Oil to 39 cents per gallon in lots of five barrels or more, and 40 cents in lots of less than five barrels. Boiled Oil is 2 cents per gallon higher than Raw. This was a reduction of 4 cents per gallon. State and Western Oil is quoted at 36 to 37 cents in this market. Another large sale is reported this week at 32 cents in tanks and 34 cents in barrels for 1900 delivery. The drop in prices has not stimulated trade except in a small way for immediate delivery. The situation has not materially changed since last week, and the market is not considered a strong one.

**Spirits Turpentine.**—The stock of Turpentine at this point is light, but sufficient for all demands. Southern is quoted at 39 cents per gallon, and machine made barrels at 39½. The market does not show much strength at these figures.

### Retail Merchants' Mutual Insurance.

**T**HE Minnesota Retail Hardware Association has just completed the organization of the Retail Hardware Dealers' Mutual Insurance Association, with the following officers: A. C. Hatch, president; H. B. Gardner, vice-president; J. W. Clark, Minneapolis, secretary; and S. R. Nelson, treasurer. The following directors have been chosen: S. R. Nelson, Owatonna; W. H. Tomlinson, Le Sueur; E. H. Loyhed, Faribault, one year; F. L. Hampson, Ada; C. R. Pierce, Duluth; C. F. Stremel, H. B. Gardner, Minneapolis, two years; A. C. Hatch, Battle Lake; H. Hauser, Fairfax; A. Marzolf, St. Paul; C. F. Ladner, St. Cloud, three years.

The association is incorporated under the laws of Minnesota in accordance with a provision made by the last Legislature. It is the intention, however, to extend its usefulness so that it may include the entire Northwest.

G. A. Moir & Co., Almonte, Ont., have thoroughly remodeled their store, bringing it up to date in appointments. A plate glass front has been put in, the store is shelved to the ceiling, bicycle ladders being used to get at the shelving. A tin shop has also been added.

### Requests for Catalogues, &c.

**F. W. PARSONS**, who has been clerking for the past 21 years, has just embarked in business on his own account at Dexter, Maine. Mr. Parsons handles Shelf and Heavy Hardware, Agricultural Implements, Sporting Goods, Wooden Ware, Paints and Oils, Carriage Wood Work, &c., and will be glad to receive catalogues and other matter of this sort from the trade.

C. H. Philpott and S. V. Armstrong have engaged in the Hardware business at 823 Market street, San Francisco, Cal., under the firm name of Philpott & Armstrong. Mr. Philpott for a number of years was connected with Dunham, Carrigan & Hayden Company of San Francisco, while Mr. Armstrong represented Sargent & Co. of New York for ten years, first in the Southwest and later on the Pacific Coast. Both gentlemen are held in high esteem by their former employers, who bespeak for them success in their new enterprise. Philpott & Armstrong would be pleased to receive catalogues and printed matter from Hardware manufacturers and jobbers.

Richard Melhuish of Richard Melhuish, Sons & Co., merchants in Tools, Machines and Hardware, 84, 85 and 87 Fetter place, London, E. C., has been spending a few months in this country and has been considering lines of American Tools and novelties which can be advantageously handled by his house. They are about to build a new store of large dimensions, which will be fitted up in the most approved and modern style. Manufacturers of Store Fittings and Hardware Shelving, Racks, &c., are invited to communicate with them. Mr. Melhuish has been impressed by the excellence of American methods in store arrangement and is desirous of adopting some of them. Manufacturers of Hardware and specialties are also invited to send catalogues of goods adapted to the English market.

### The Osborn Mfg. Co.'s Catalogue.

**T**HE OSBORN MFG. COMPANY, Cleveland, Ohio, have just issued an illustrated and descriptive catalogue and price-list, No. 91, which supersedes their previous issues. The book is very complete and sets forth their particular branches of the Brush and Broom business in a very satisfactory manner. House Brushes, including Floor, Counter, Window, Sink Brushes, &c., are shown; also special Brushes for railroad use, a large line of Push Brooms, Brushes and Brooms for brewers' use, and a variety of Tumbler and Billiard Table Brushes. Several pages are devoted to special Brushes for dairy and creamery use, while Butcher Block Brushes and Brushes for foundry and platers' use are fully represented. Special attention is directed to the Economy Wire Wheel Brush for foundry and platers' use, also to their safety Tampico Wheel Brush for bicycle makers and other metal finishers. A large line of special Wire Brushes for furnace and heater manufacturers are also illustrated.

E. T. Barnum, Detroit, Mich., manufacturer of Ornamental Iron, Wire and Brass Work, has lately added a number of new and handsome designs in these lines which are shown in the regular spring editions of his various catalogues, just issued. Mr. Barnum's manufactures cover Builders' Wire and Iron Work, Iron and Steel Fencing, Jail Cells, Bank and Office Railings, Vases, and Lawn Furniture and Cemetery Vault Doors and Gates, separate catalogues relating to which are issued.

Sweet, Packard & Co., Troy, N. Y., have succeeded Sweet & Packard. Business is referred to as increasing so rapidly that the present quarters are too small, and accordingly the size of the establishment will be increased from 20 x 40 feet to 20 x 85 feet, with an L to side street at the left of 25 x 20 feet, and a one-story building, 30 x 40 feet, forming an L to the right of rear of main store, the latter building being used as a tin shop. To the present stock of Shelf Hardware, Sporting Goods, Bicycles, &c., it is intended to add a full line of Stoves and House Furnishing Goods.

S. M. Rhodes has succeeded Long & Rhodes, at Ashland, Ore.

## The Chicago Retail Hardware Dealers' Association.

**T**HIS association was begun in a modest way, its growth having been a development of peculiar circumstances and conditions. The Chicago retail Hardware trade partakes of the character of the city, which is cosmopolitan. Almost all nations of the earth are represented there, and the habits of the people have to a great extent been transplanted with them. In such a city the struggle for business is conducted in a different manner from that which prevails in older cities of this country, settled mainly by English speaking people. Sunday is not always observed as a day of rest, but numerous merchants display their wares and ply their vocation on that day as industriously as on any other day of the week. The merchant and his clerk know no cessation from labor either on the usual day of rest nor on any evening of the week.

### Determined to Make a Change

in this respect, Ehler Goettsche in 1892 visited a number of Hardware merchants in his vicinity, and secured an agreement from them to close their places of business every Sunday. The acquaintance thus begun and the better feeling immediately created caused a desire for the establishment of an association, not only to maintain Sunday closing, but to secure other reforms. An organization was effected in 1893 under the name of the Hardware Dealers' Association of the Northwest Side. It was thus of a strictly local character, and designed to include the merchants only of a particular section of the city.

The leading spirits in forming this association were George A. Engelhardt, who became the first president; Theodor Krueger, who afterward served as president for two terms; J. L. Smith, who was elected treasurer, and has held the office ever since; Mr. Goettsche, who was elected secretary and has been re-elected every year despite his desire to be relieved from the duties of the office, and C. Menzel, who has always been an enthusiastic worker.

### The Constitution

which was adopted provided that the members should agree to keep their stores closed on Sunday throughout the year, and that they would further close their places of business on Wednesday and Friday evenings at 7 p.m. each week during the months of January, February, March, April, July, August and September. These are the months in which business is least active. The dues fixed were simply enough to pay for hall rent for monthly meetings and for the necessary expenses of the secretary.

### Securing Other Benefits.

It was found after the association got into good running order that the better acquaintance thus created made it a comparatively easy matter to compare notes with regard to prices, and thus secure more uniformity among merchants having stores located near together. A great deal of cutting and jealous competition was stopped, and better profits were secured on goods sold. A discussion of prices brought with it the possibility of

### Making Purchases

for the joint account of the members. This was first begun by Mr. Goettsche, who bought portable ovens for Gas and Gasoline Stoves in 1895 and distributed them to a number of members who had joined with him in the purchase. For some time the joint buying was done in this way. The members compared prices which they had received, and advantage was taken of the lowest price which any one had secured. This led naturally to the appointment of a

### Buying Committee

into whose hands was put the business of making purchases in carload lots for all the members who wished

to take advantage of this method of doing business. Theodor Krueger and Geo. A. Engelhardt, with Mr. Goettsche, have been prominently connected with this Buying Committee from the beginning. The committee at present consists of Mr. Krueger, Mr. Engelhardt and Fred. Sommer. The

### Method Which They Pursue

is to keep careful watch of prices, more particularly on seasonable goods, such as Oil Stoves, Gasoline Stoves, Ovens, Refrigerators, Lawn Mowers, Wire Cloth, Window Screens, Screen Doors, Gas Tubing, Rubber Hose, &c. When the best price has been secured the Buying Committee receive from the members orders for whatever quantity they wish, and an order for the total quantity is then made up and sent to a manufacturer. The bill is usually made to some member of the Buying Committee, and when the car arrives in Chicago he immediately notifies all those for whom the goods are destined to send their wagons to the freight depot, where he has a man in charge to see that each one secures the exact goods he ordered. The car is usually emptied in three or four hours. The member of the Buying Committee who takes charge of this distribution pays the entire bill, and collects the amount due from each one who participated in the transaction, every member being responsible for what he buys and not the association.

This necessarily involves some time and considerable trouble, and a charge of 5 per cent. is made above the actual cost of the goods to reimburse him for his services. It sometimes happens that the manufacturer from whom the goods are purchased is willing to make the shipments to the different parties uniting in the purchases, and to carry the separate accounts himself. This feature of the association work is not recommended to other organizations unless they have among their number some who are willing to give a considerable part of their time for the benefit of their fellow merchants. The compensation received by the Buying Committee does not fully repay those who attend to this business for their time and numerous petty annoyances which are involved.

The Chicago Association have been fortunate in finding men like Messrs. Krueger, Engelhardt and Goettsche willing to do so much for the benefit of their colleagues in trade. Of course they derive advantage from it in getting their own goods at low prices, and they further are kept unusually well informed with regard to prices. Salesmen are aware of the fact that large quantities of goods are bought in this way, and they seek the members of the Buying Committee to secure their trade, thus giving them the benefit of low quotations. At the same time this also has its other side, as much valuable time is taken up in interviews with such salesmen. The association has found that it is only profitable to

### Purchase Certain Classes of Goods

in this way. The goods they buy are those on which margins are sufficiently large to enable them to get a good reduction by taking carload lots. Thus, for instance a purchase was made only a week or two since on which the best discount to be obtained on a small lot was 15 per cent off. By purchasing a carload the Buying Committee secured 20 and two 10's off. They never buy Barb Wire, as Chicago retailers do not sell it, and they have seldom bought Nails. They do not knowingly purchase from any manufacturer who sells to department stores, but endeavor to secure promises from those whom they favor with their business not to sell to such stores.

### Bad Customers and Sociability.

Other objects secured by the association are the protection of the members to a great extent from customers who do not pay their bills and the cultivation of sociability among the members. They notify each other relative to bad customers, especially when such people remove into another merchant's vicinity. At certain times in the



year they hold balls, picnics or other social gatherings, by means of which they become better acquainted with one another.

**A Successful Contest and Its Effect.**

In 1898 the association became widely known throughout the city an account of a contest which they fought

Applications for membership were made by merchants in other parts of Chicago who were cognizant of this fact, and a change was then made in the name of the association. It is now known as the Chicago Retail Hardware Dealers' Association, and its members are no longer confined to the northwest side, but are distributed



DENNIS McLAUGHLIN.  
President.



W. J. KRUEGER,  
Vice-President.



EHLER GOETTSCHÉ  
Secretary.



J. L. SMITH,  
Treasurer.

**OFFICERS OF CHICAGO RETAIL HARDWARE DEALERS' ASSOCIATION.**

and won with the gas company. At that time the gas company began to sell Gas Stoves at cost prices to consumers of gas, and thus threatened to take considerable trade from the Hardware merchants, as well as to subject them to loss on the Stoves which were in stock. Mr. Goettsche called a meeting of a number of merchants, including many outside of his association, and an agent of the gas company who learned of the meeting attended it, and the conference resulted in the interests of the Hardware dealers being taken care of thereafter.

all over the city. The association is constantly gaining new members from those who are still not connected with the organization. A list of the members is as follows:

E. Goettsche, 1049 Milwaukee avenue.  
G. Engelhardt, 726 Milwaukee avenue.  
C. Menzel, 468 West North avenue.  
J. L. Smith, 752 West North avenue.  
N. N. Lindberg, 1606 Milwaukee avenue.  
B. F. Boysen, 780 West Division street.  
H. Muehlhan, 691 West North avenue.

Th. Krueger, 141 Milwaukee avenue.  
 L. Stauber, 360 West Chicago avenue.  
 Cervený & Hora, 661 Milwaukee avenue.  
 H. Fehr, 249 West North avenue.  
 R. Freytag, 897 Milwaukee avenue.  
 L. M. Matthews, 1850 Milwaukee avenue.  
 N. C. Bartholdy, 486 Milwaukee avenue.  
 A. L. Adam, 1742 Milwaukee avenue.  
 Severtsen Bros., 1103 West North avenue.  
 A. Greenheid, 765 Armitage avenue.  
 H. Smith, 921 Armitage avenue.  
 C. Sokup & Co., 427 Milwaukee avenue.  
 M. C. Anderson, 806 West North avenue.  
 C. Dalbke, 189 Division street.  
 G. Strauss, 1085 Milwaukee avenue.  
 R. Wiersig, 1236 North California avenue.  
 Guthaus Bros. & Matthews, 1166 Milwaukee avenue.  
 Cuno Wirths, 682 Grand avenue.  
 F. Matthews, 893 West North avenue.  
 M. Schweighofer, 1059 West North avenue.  
 M. Brucker, 325-331 North Lincoln street.  
 Herzog & Spindler, 587 West Chicago avenue.  
 E. E. Naumann, 420 West Division street.  
 Wm. Bahn, 563 Lincoln avenue.  
 Fred. Kurtz, 1061 West Madison street.  
 A. C. Selleck, 755 West Madison street.  
 Wm. F. Siewert, 1329 Armitage avenue.  
 Juergens & Kasten, 548 West Division street.  
 D. McLaughlin, 1353 Ogden avenue.  
 Chas. Arnold, 424 West Belmont avenue.  
 W. J. Krueger, 625 West Twelfth street.  
 J. M. Rudel, 514 Ogden avenue.  
 Max Reif, 628 Larrabee street.  
 G. J. Bartholdy, 387 Grand avenue.  
 F. H. Schanze, 566 West Twelfth street.  
 F. F. Porter, 317 West Sixty-third street.  
 E. Sanders, 872 Lincoln street.  
 Wm. H. Decker & Co., 204 Thirty-first street.  
 J. F. Borchardt, 495 Ogden avenue.  
 H. E. Rebmann, 2078 West Lake street.  
 E. Hauck, 583 East Division street.  
 G. J. Pfeiler, 6308 South Halsted street.  
 John Rice, 494 Wells street.  
 L. H. Schmertmann, 588 Madison street.  
 Sigfried Melohn, 952 Lincoln avenue.  
 A. T. Matthiesen, 292 Milwaukee avenue.  
 C. W. Johnson, 294 Grand avenue.  
 E. R. Schlick, 437 North Clark street.  
 J. C. Rendtorff, 296 Clybourn avenue.  
 Wm. Noebeling, 415 East North avenue.  
 A. Ruhling & Co., 514 North Clark street.  
 E. C. Minas, Hammond, Ind.  
 Henry Stuckardt, Archer avenue and Halsted street.  
 L. Rosenberg, Ninety-second street and Erie avenue.  
 H. E. Gnadt, 225 Roscoe Boulevard.  
 Bewersdorf & Sachtleben, 906-908 West Twenty-first street.  
 Henry Fittge, 3809 Archer avenue.  
 E. H. Beiersdorf, 154 Wells street.  
 E. L. Sommers, 7106 Cottage Grove avenue.  
 C. F. Woolley, 2937-41 Archer avenue.  
 Wilson & McDonald, 338-40 Fifty-fifth street.  
 Jos. Kral, 423 West Eighteenth street.  
 H. E. Tyring, 66 West Madison street.  
 C. E. Coats, 1996 West Madison street.  
 H. L. Peterson, 3120 Cottage Grove avenue.  
 J. H. Bixler, 3716 South Halsted street.  
 P. Rosenfelder, 5251 South Ashland avenue.  
 H. Garrett, West Pullman, Ill.  
 O. D. & W. M. Powers, 95 East Forty-third street.  
 A. Pophal, 4828 South Ashland avenue.  
 Schubert Bros., 5822 Wentworth avenue.  
 W. H. Elliott, 3122 State street.  
 W. B. Costello, 361 Forty-third street.  
 August Haack, 4759 South Laflin street.  
 Fred. Sommers, Twenty-second and State streets.  
 E. J. Pawelkiewicz, 1812 South Forty-eighth street.  
 Christ Hahn, Armitage and Hancock avenues.  
 Christ Carr, 315 East Division street.  
 Veit Wonder, North and Springfield avenues.  
 A. R. Solle, 252-254 Thirty-first street.  
 C. H. Rice, 249 East Fifty-seventh street.  
 Whiting Hardware Company, Whiting, Ind.  
 J. L. Holmes, 1415 West Madison street.  
 Smith Petersen, 3958 Dearborn street.  
 C. A. Dalstrom, 1340 Belmont avenue.  
 Mr. Krueslin, 437 West Fullerton avenue.  
 A. E. Lott, 954 West Lake street.  
 Winkenwarder & Lothamer, 1740 Lincoln avenue.  
 L. E. Steinagle, 1621 and 1623 West Forty-seventh street.  
 W. A. Ludwigs, 611 Blue Island avenue.

#### Present Officers.

The officers serving this year are as follows: President, Dennis McLaughlin; vice-president, W. J. Krueger;

secretary, Ehler Goettsche; financial secretary, John Hora; treasurer, J. L. Smith; Buying Committee, Theodor Krueger, Geo. A. Engelhardt and Fred. Sommer.

#### Subjects of Our Portraits.

DENNIS McLAUGHLIN, president of the association, is 38 years old and was born in Utica, N. Y. He is a practical tinner by trade, but served for some time in the Fire Department of Buffalo. He then made a trip to California, but concluded to return East and engage in business. He removed to Chicago some 12 years since and started a Hardware store near the location of his present establishment, which is at 1353 Ogden avenue. It was then far out on the prairie, with scarcely a building in sight, but Mr. McLaughlin had a firm belief in the growth of the city and his expectations were realized. He now enjoys a fine trade in Builders' Hardware, which is not confined to his own neighborhood, but extends all over Chicago.

W. J. KRUEGER, vice-president, was born in Blue Island, Ill., just outside the present city limits of Chicago, and is now 40 years of age. He learned the tinners' trade and 14 years since started in the Hardware business. He was first an employee and then became a partner with E. R. Lott, who had the reputation of running one of the largest retail Hardware stores in the city. His place of business is at 625 West Twelfth street, in the immediate vicinity of the store in which he first began business.

EHLER GOETTSCHÉ, secretary, was born in 1858 in Schleswig-Holstein, Germany. He learned the trade of machinist and pattern and tool maker, and became assistant engineer on the Hamburg-American Line of steamships. After several trips to this country he concluded to stay in 1881 and went to Chicago. After working for Wm. Deering & Co., manufacturers of Harvesting Machines, for five years he opened up a Hardware store on Chicago avenue and then removed to his present location at 1049 Milwaukee avenue.

J. L. SMITH, treasurer, was born in Norway and spent his early years as a sailor. In 1869 he came to this country and has been a resident of Chicago since 1871. He was employed by Jones & Laughlins for ten years and by Wm. E. Stockton for two years, after which he took charge of a Hardware store. On March 8, 1889, he started in business for himself and now has a fine store at 752 West North avenue.

#### A Hardware Dealers' Day.

The association has decided to celebrate a Hardware Dealers' Day this summer by holding a picnic on some week day the date of which will be announced later. The committee to make arrangements for this occasion consists of Anthony Engelhardt, Theo. Krueger, A. E. Lott, W. B. Costello, John Borchardt, F. Kurtz, F. Ruhling and D. McLaughlin. An effort will be made to induce all the retail Hardware dealers of Chicago to close their stores on that day and take an outing with their clerks and families. In this way it is expected that the Chicago dealers will become better acquainted with one another socially, and thus the mutual interests of the merchants will be greatly promoted.

Ferguson Hardware Company, Sault Ste Marie, Mich., have been succeeded by Chippewa Hardware Company, Limited, who have been organized with a capital stock of \$25,000. F. B. Chesbrough is president of the company, and Geo. E. C. Seaman general manager of the business. The company wholesale and retail a varied line embracing Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, Sporting Goods, Ship Chandlery, &c. They also conduct a plumbing and heating department.

Rascher, Schricker & Rascher Hardware Company are successors to Kurmeier & Rascher, at Davenport, Iowa, wholesale and retail Shelf Hardware, Stoves and Sporting Goods. The new firm have put a new front on the store, and made an addition of 75 feet to the rear of the building. Warren's shelving is used in the retail department.



## Retail Hardware Dealers' Association of Southern Indiana.

THE recently organized Association of Hardware Merchants of Southern Indiana has issued its constitution and by-laws and is inviting Hardware merchants to become identified with the association.

The object of the association is indicated by the following

### Resolutions:

*Whereas*, The retail Hardware dealers of Southern Indiana have been and are now suffering greatly from the sale of merchandise in their line by manufacturers and jobbers direct and through department stores to the consumers, and such trade is not regularly established in the retail Hardware business; and believing themselves in need of protection against such trade, be it

*Resolved*, That we, who are present at this meeting, proceed to regularly organize an association that shall be known as the "Southern Indiana Retail Hardware Dealers' Association," whose object it shall be to promote the interest of and secure the friendly co-operation of each and every retail Hardware dealer.

*Resolved*, That the association thus organized demands of all manufacturers and jobbers of Hardware that they confine the sale of their wares to the Hardware dealers who carry a full line of the same, and that each and every member of this association pledge himself to use every reasonable effort to enforce this demand.

*Resolved*, That a cordial invitation is hereby extended to all regular and legitimate retail Hardware dealers to unite with this association.

### The Association.

#### MEETINGS. — Regular

meetings of the association will be held semi-annually on the first Wednesday of February and August.

**MEMBERSHIP.**—Persons or firms engaged in the retail Hardware business and carrying a full and complete assortment are eligible to membership. The admission fee is \$3, which covers the dues until the regular meeting in February following. The annual dues are \$3, payable at the February meeting.

#### Protection of the Trade.

In order to carry out the purposes of the association, so far as they relate to protecting the retailer from the competition of manufacturers and jobbers, the following provision is contained in Article 14 of the constitution:

In case of a violation of the resolutions of this association by any Hardware manufacturer or jobber, thereby affecting the business of any member of this organization, the member thus affected shall call on or correspond with such manufacturer or jobber and endeavor to adjust the same, and if not satisfactorily adjusted he shall then notify the secretary of his action, giving sufficient evidence as to the facts in the case, who shall immediately take the matter up, and if not then adjusted the secretary shall notify each and every member of the association, who shall discontinue to patronize such manufacturer or jobber.

## John G. Lane.

JOHN G. LANE, senior member of the firm of Lane Brothers, Poughkeepsie, N. Y., died at his home in Philadelphia on the 29th ult., after about three weeks' acute illness, though he had been in failing health for some three years. Mr. Lane was born in Westchester County, N. Y., in 1829. His early years were spent on the farm and in attendance at boarding schools, &c. About 1850 he married Anna J. Swift, daughter of Beriah Swift, and moved to Millbrook, her native place. He became interested with his father-in-law both in his agricultural pursuits and in the shop work, which latter grew gradually into more importance than the former.

The manufacture of the Swift Mills, still continued by Lane Brothers Company, was started by Mr. Swift. Soon after Mr. Swift was removed by death, and John G. Lane continued the business alone, till the admission of his brother, Wm. J. Lane, as partner in 1866. Lane Brothers put a number of new articles on the market,

many of them agricultural implements, and their business steadily increased till in 1882 it was moved to Poughkeepsie, N. Y., to secure improved transportation facilities. The firm have been perhaps best known to the Hardware trade through the sale of their Barn and Parlor Door Hangers, and in connection with this part of the business Mr. Lane became personally known to most of the prominent Hardware buyers throughout the country.

In 1876 he suffered the loss of his wife, which was a sore bereavement to him. Some years later he married her niece, Mrs. Elizabeth Wills, whom he survived by about five years.

Mr. Lane was a man of extensive general information which, combined with his attractive social qualities and sterling integrity, endeared him to a wide circle of friends. He had

traveled extensively both in this country and abroad. He was a lifelong and earnest member of the Religious Society of Orthodox Friends, commonly known as Quakers. His philanthropic work was widespread, extending over a period of many years, but was conducted in such a quiet manner that few even of his most intimate friends were aware of its extent. He was much interested in the welfare of his fellow men and naturally the political situation in his own county claimed his serious attention, but he did not hold any political office.

He had no children, but leaves two brothers, David Lane of Westchester County, N. Y., and Wm. J. Lane of Lane Brothers Company, also a stepdaughter, Mrs. J. J. Albertson of Philadelphia, and Magnolia, N. J.

The business of Lane Brothers, having been reorganized into a joint stock association some time ago, will continue under practically the same management as formerly.

At the commercial convention recently held in Louisville Charles F. Huhlein, general manager of B. F. Avery & Sons of that city, made an interesting address on the "Manufacturing Interests of Kentucky." Mr. Huhlein pointed out in 1850 Kentucky stood thirteenth in the rank of manufacturing States, while in 1890 she had dropped to sixteenth in rank, though turning out six times the value of the product of 1850. She still, however, continued to lead the States south of the Ohio River.



JOHN G. LANE.

## The Hardware Trade in the United States.

THE following article by William G. Smythe of Russell & Erwin Mfg. Company, New York, is taken from the *Chautauquan* for May. It will be read with interest by merchants and manufacturers as giving a condensed and comprehensive general view of the great trade of which it treats, and with which its author is so prominently connected:

In the growth and development of a new country the Hardware trade has necessarily an intimate and important part to play. From first to last it is designed to aid and supplement man's efforts. The settler's Axe, the farmer's Plow, are all contributions of the Hardware store. From it come the tools and nails that set up the first homes of the land. And in time, when the wealth of the individual and the country has its apt and material expression in beautiful homes and handsome public buildings, it is the Hardware trade which provides, in Metal Trimmings and Finishings, a thousand and one contrivances that our modern standards of luxury and convenience require.

As might be expected of so non-committal a word, which only stipulates "hardness" as a characteristic of its products, Hardware includes a great variety of articles. These, in their manufacture and sale, fall naturally into certain groups, any one of which frequently constitutes an interest in itself. Domestic Hardware includes Agate, Tin and Iron Utensils and other Household Furnishings. Builders' Hardware explains itself in a long line of Bolts, Locks, Knobs and Trimmings, in addition to Building Staples, while Tools, Agricultural Implements, Machinists' Supplies, Cutlery and Saddlers' Hardware are common trade distinctions.

The history of the Hardware industry in America is coincident with the history of the United States. Americans are justly proud of their century and a quarter of national development, and for the same time the annals of Hardware manufacturing are an equally creditable record of growth and progress.

At the birth of the nation the industry practically did not exist; for the royal government, recognizing in the growing colonies an important outlet for English products, had tolerated no competition and suppressed all manufactures. Our early Hardware was therefore imported, and for the most part of English make, the mother country continuing to be the principal source of supply throughout the colonial period. With independence came the beginnings of Hardware manufacturing, which if small were at any rate prompt and significant. Soon the War of 1812, emphasizing the separation from England and throwing the people on their own resources, gave a great impetus to all manufacturing interests. But American Hardware in a differential and distinctive sense dates from about 1840, when the struggling American manufacturer began to get a foothold. Gradually the superiority and more attractive appearance of his goods were recognized and the foreign article supplanted. To-day we not only satisfy the home needs but have an export trade which has more than doubled in the last decade. American Tools especially are invading every market in the world, while England and Germany have been forced to concede America's ability to maintain her place in the ever increasing competitive struggle in the exportation of Hardware products.

Not figures alone show the marvelous spread of American goods—you may hear a Cow Bell in the Swiss Alps that was made in Connecticut, and many a Machete returned this summer to its native land as a grim souvenir of battle. For the Machete, which attained such prominence and had such a deadly sound in the newspaper reports of our late war with Spain, has, under its less dangerous English title, Cane Knife, long figured largely in the invoices of our Cuban trade. American missionaries have carried American goods to strange places and perhaps opened up future markets for our tools and implements; but what has made American Hardware a

familiar term the world over is not alone the ambition and enterprise of the American merchant. It is the genius of the American mechanic and inventor.

The common Nail offers a characteristic and striking illustration. There were Nails before Columbus was born, for Nail making is one of the oldest of the handicraft arts, but the art of mechanical Nail making is conceded to be American in both its origin and development.

The nails the colonists brought over were hand wrought and necessarily scarce and expensive, as were all articles of manufactured Iron. In the early days of Maryland and Virginia people burned their abandoned houses for the sake of recovering the Nails in the ashes, while in the rougher types of buildings the undressed logs were held together by wooden pins. In New England the thrifty agricultural population turned to Nail making by the fire-side in the long winter.

Soon, however, in the rapidly developing country, where there were so many wooden structures to be erected, cheap Nails became the crying need. Under so imperative a stimulus a machine was invented designed to cut in one process a complete Nail from an iron plate. This was a momentous beginning. A series of patents extending from 1775 to 1884 developed a high degree of efficiency in Nail making machinery, and by numerous stages perfected the process whose product is universally and technically known as the American Cut Nail. Truly the "great glory of the Americans is in their contrivances," and no one achievement of American inventors has greater practical value or has contributed more directly to progress than this one little Hardware unit.

For nearly 100 years the American Nail has been alone in the field. Gradually, in the manufacture of Nails as in every department of Hardware, Steel is supplanting Iron, and within the last decade the Cut Nail has found a rival in the Wire Nail of French extraction. Many millions of kegs of this Nail are now turned out annually by our factories, and it is undoubtedly the Nail of the future. But it was the American Cut Nail which, answering the cry of necessity, played its important if humble part in the "upbuilding" of the nation and is a proud and consistent illustration of Hardware development in the United States.

The statistics of a trade which caters to the necessities rather than to the luxuries of life show as nothing else the marvelous consumptive capacity of the country. Few can realize that it takes annually more than 100,000,000 Tire Bolts to keep the wheels of the country going or of Iron Screws about 2,500,000,000 to keep things together.

The burden of the distribution of these millions rests on the Hardware jobber, a middle man, peculiar to American business methods, who carries for the convenience of the smaller merchant a stock which is the accumulation of many factories. Other countries handle their products direct from factory to retail shop; but with us the great distances which separate the local dealer from the industrial centers have made the Hardware jobber a necessity.

The locations of these jobbers become known as centers of distribution. The centers of a Hardware distribution in the United States show a firm westward tendency. In the days of imported Hardware the seaport cities were the distributing points which forwarded the Hardware to the whole country, but with the natural spread of population and the improved facilities in transportation the centers of distribution have moved steadily westward and are now represented in the middle West.

In opposition, however, to this progressive westward movement of the distributing centers, the centers of industry for the Hardware trade remain stationary, and now as always its great manufacturing interests are concentrated in the Northeast, where environment and heredity combine to produce a population adapted to the conditions of mechanical labor.

Certain localities supply their own specialized needs; California, though not a manufacturing State, makes the Cannery's Tools which prepare for market the products of her orchards and fruit farms. The Northwest makes for use in its own grain tracts Reaping and Harvesting



Machines. Pennsylvania converts much of her own iron and steel into Tools and Heavy Hardware before it leaves her borders and has become a very important factor in Hardware production.

But, generally speaking, the industrial centers for the Hardware interest are and will remain in the New England and neighboring States. Manufacturers are obliged to establish their works where they can command skilled labor, and so, though the growth and expansion of the country may take the consumer further and further from the source of supply, the industrial center must change so slowly, if at all, that the future of the jobber is assured. The Hardware jobber or merchant, in addition to his ability to handle many thousands of tons of varied products, must also be past master of the mysteries of Hardware price making. For in its system of lists and discounts the Hardware trade has a method of business peculiar to itself; a manufacturer's price-list being by no means a selling price, but rather the commonly accepted valuation showing relative costs for various sizes and grades of goods. All Hardware manufacturers use the same unvarying list prices on standard goods and then from these list prices selling prices are quoted by means of a system of discounts. For example: The ordinary Tack which in 4, 6 and 8 ounce sizes lists at \$1.45, \$1.55 or \$1.65 per dozen papers will perhaps be sold "90, 15 and 10" off, till the actual selling price is only a few cents. Many influences have been at work to reduce this established list price to its anomalous position, but it seems an unaccountable mystery to all but the initiated.

Undoubtedly when originally established this list value was the market value, so the widening gulf between list and selling price shows the great diminution in value of all Hardware products. I do not refer to a temporary reduction due to competition and depressed conditions of trade generally, but to a gradual lessening in cost which the years have brought about, the natural and desired result of cheaper material and improved appliances and processes.

The basis of Hardware is principally iron and steel, and the value of the manufactured product bears a direct ratio to the cost of its constituent material. Hence with the development of the great mineral resources of this country, resulting in increased production of iron and steel and consequent decrease in their values, there has been a corresponding decrease in Hardware values. American iron and steel now compete successfully in the great markets of the world and will eventually give American Hardware, in its manifold forms, a commanding position in the same markets.

Further, it can be said of Americans that they are essentially a machinery using nation, and in no department of industry has this triumph of machine over man been more marked or conducive to more important economic results than in the manufacture of Hardware.

It has been a long step these 125 years between the patient home Nail maker and the modern Nail cutting machine with its capacity of 100 to 1000 Nails a minute. American impatience and push have accomplished this and many equally valuable labor saving devices which have been gladly adopted by the American people. Serious riots have followed the introduction of machine power in some of the overcrowded manufacturing centers of old England, but it is characteristic of Americans of all classes to accept eagerly the latest thing.

The machinery of the Hardware factory has steadily advanced in simplicity of form and function and economy of production. There are in common use to-day in the Screw factories of Ohio and Connecticut machines which can turn out a perfect Screw—thread, head and slot—in one process—which obviously means a cheaper article than ever before. And this is typical of the progress in all branches of Hardware manufacture; so that as regards Hardware generally and American Hardware in particular the necessary result of the cheapening of its two great factors of production, method and material, has been a great reduction in cost.

The manufacture of Hardware involves large and com-

plete factories, and all Hardware nowadays is the product of factory work. Yet there is no such thing in reality as a "Hardware factory." It exists only as a convenient descriptive term. For hardware is a broad word, and so great is the number and variety of articles included that no one factory scheme, however comprehensive, could possibly absorb them all. A detailed management is the only feasible one and not infrequently each object must be made the basis of distinct manufacture. And so for greater facility in production we find great plants devoted to the manufacture of Agate Ware, Tools or Builders' Hardware, or content with the single product of Drills, Screws or Files.

Naturally the equipment and methods of manufacture vary with the product. Hand Tools, not exacting great power or complicated machinery, are small job work; while Machinists' Supplies, representing the highest class of machine work, are made in the most modern and best equipped factories in the world. It is for the manufacture of Light Hardware and Builders' Hardware that we find the largest and best organized factories, employing the greatest number of hands.

This tendency to specialization in Hardware manufacturing, which after all is the tendency of the age in everything, leads ever to greater improvement in the quality and quantity of the article produced. In its working it trains up a class of skilled workmen, really intelligent machinists, ever on the alert to the possibility of some improvement in the processes and products they know so intimately. Many a Hardware factory to-day is working patents taken out in the name of its foreman or even a man in the ranks.

Our cheap and accessible patent system stimulates every form of improvement. Hardware people have had early and continued advantage of its benefits, since the files of the United States Patent Office record many a triumph of the Hardware inventor and manufacturer. The first patent, though it included much besides, protected the manufacture of "Scythes and Edged Tools," and to this day the best Saws are made in America. Also the first steam power applied to manufacturing purposes was tried in a Hardware factory of New Britain, Conn. Each succeeding year has contributed to the number of useful articles covered by the term Hardware, till the reports of the United States Patent Office constitute the most complete catalogue of Hardware in existence.

This technical catalogue of Uncle Sam's, though a splendid tribute to the American Hardware manufacturer, is not, however, the one on which he relies to advertise and exploit his goods to the trade. Periodically the big manufacturers and merchants get out a classified catalogue of their stuff; a catalogue which has grown from a modest circular to a magnificent volume of over 1000 pages, substantially bound and handsomely illustrated with cuts and half-tones. These are freely distributed, so that each Hardware dealer accumulates a valuable trade library, which indicates the range and possibilities of his business. An examination of these catalogues reveals not only in themselves but in the articles they describe the great artistic improvement in Hardware of recent years.

Most especially is this shown in the department of Builders' Hardware. There the nineteenth century has not alone been a century of mechanical progress, for the designs for the "trim" and "finish" of buildings have kept abreast with the changes and improvements in architecture. American architects demand the newest and best in this department of Hardware, and it may be said to be an essentially American branch of the trade, since there is no market outside of the United States for its finest goods.

With us different styles of treatment must each be accompanied by suitable Hardware, whose design, execution and finish are of the best. The present prevalence of the French school of architecture, due doubtless to the training of our younger men at the *École des Beaux Arts*, is reflected in "Touraine," "Marie Antoinette" and "Louis XVI" designs for door and window fittings. Not infrequently, when special effects are desired, the archi-

fect designs Hardware as well as house, and the result is in the highest degree artistic and suitable.

The admirable quality of American Builders' Hardware is well illustrated in the American door Lock of the better class. Its knob and escutcheon lend themselves to the most elaborate treatment. Its mechanism is highly efficient, so that it combines both scientific and artistic excellence.

Perhaps when all is said no Hardware device adds more to the comfort and security of every day life than the various contrivances for keeping the wrong person out. And in the development of Locks American inventors have again an honorable share.

Our forefathers were a sturdy race, but I know they could not carry 10 or 12 Keys on their persons, as most men do to-day. Yet the modern Steel Lock, with its flat little Key, offers much greater resistance to the Lock picking fraternity than did its clumsy iron progenitor of two and three times its size. The American Lock is remarkable even in these days for the smallness of its Key. Also American in their origin are Time Locks for Safes, where a Clock is so combined with the mechanism of the Lock that it can only be opened at specified hours, when the Clock releases certain Bolts and enables the Key to do its work. Another interesting development in modern scientific Lock making is the making for hotels and institutions of a large number of Locks in sets so arranged that while the Key of one will not open any of the others, yet there is one Key, the Master Key or Pass Key, which will open all.

In the manufacture of Locks the parts are made by machinery and put together and finished by hand, by a system of piece work where the workman, working under factory supervision, is paid at a fixed price per finished lock.

So much science and art go into the modern Lock that it is in this department of Hardware manufacture that what political economists call economy of production is greatest. That is, here the value of the product more than triples the value of the constituent material, whereas in the heavier and coarser grades of Hardware the first cost rarely exceeds twice the cost of the Iron or Steel consumed.

As to the conditions of labor in Hardware manufacturing, it is estimated that the man who works in a Hardware factory, though he handles from 6000 to 10,000 pounds a year, has nevertheless a safe, healthful trade and good wages; wages which in America are 50 per cent. higher than for the corresponding grade of work in the older countries. His work is usually in some rural neighborhood or smaller city, where his family can be comfortably housed at moderate cost, and in the lighter work of the factory, in tending small machines and especially in the packing room, there is work for his daughters. With the great improvement in the mechanical part of manufacturing the work of packing becomes relatively more important. Besides, everything must be neatly and attractively put up for sale nowadays, so that in some of the big modern factories, equipped with the latest labor saving devices, from 15 to 20 per cent. of the number of hands are employed in the packing room. In this there is a large and congenial field for women workers, though except on the clerical and office force women have a smaller opening in Hardware than in almost any other trade.

The Hardware trade is one of the world's great industries and takes prominent rank in the United States. Rich and poor alike require its products, so no town lacks its general Hardware store. In the making and handling of its goods it is a means of livelihood for thousands of American bread winners. Its factories with their large number of operatives support half the population of some New England towns. Its drummers are to be found on every train, and there are Hardware merchants who do an annual business of over \$10,000,000 and conduct great establishments unequalled for size and completeness. The foundations of some of the big fortunes of the country

were laid in Hardware; fortunes made great, however, by land and railroad investments.

The extent of the Hardware trade in this country is shown not alone by the value of its product, which approaches the \$50,000,000 mark, or the number of people it engages, but manifests itself in the number of journals and associations which bear its name. There is more than one exclusively Hardware publication, and what is probably the ablest and best of all trade journals is devoted to the interest of the Hardware trade in the United States.

In addition to many local clubs, the Hardware trade is a national association comprised of Hardwaremen from nearly every State, at whose annual dinner there is always a hearty toast to American Hardware.

## A Merchant of the Last Century.

Gleanings from John Hancock's Letter Book.

BY WM. H. MAHER.

THERE has recently been published a volume entitled

*John Hancock: His Book,*

the material being largely gathered from an old letter book used in the business of the famous signer of the Declaration of Independence, whose public life so largely overshadowed his career as a merchant that many will now learn for the first time of the immense business controlled and personally managed by him from the year 1763 until the breaking out of the Revolution.

To a business man the book has a rare fascination, both in the style of the correspondence, in the mention of the wares handled and in observing in how many things the business life of a century ago was similar to our experience of to-day. We discover that prices were at times too high and again too low; that men were watchful of their competitors and as keen to catch them napping as now; that combinations were proposed as a means of controlling prices, and that the annoyances of a commercial life played as large a part in business affairs as they do to-day, and probably will be found equally prominent in any letter books of the next century.

Among the early pages is a reference to Hardware, in a letter introducing a buyer and guaranteeing the payment of the purchase. I propose to quote exactly as written because the abbreviations, the use of capitals and the language all make a delightful study, but to appreciate them to the full one needs to remember that Hancock was a graduate of Harvard College, and consequently that his letters are examples of the best usage in letter writing of his day:

Boston, Decemr 28th 1762. Gentn: I have not yet Rec'd the Goods I wrote you for, hope they will soon arrive. This is chiefly to cover you the Inclos'd Letter from Mr. Willm Bowes, who is a Nephew of mine & who has some time dealt in hardware & inclined to correspond with your house. He now writes you for some Goods. You are safe in Dealing with him, & I am to Desire you will supply him & for what he now writes I will see you paid.

I am Gentn  
Your most Obedt Humble Servt.

The rather ornate ending is a part of every letter, no matter how hurriedly it is written. In some cases, after a sharp reprimand for overcharging or delay, it seems somewhat hollow, but it was evidently the proper form for the times.

One of the early letters to his London correspondents calls for "Seventy-six casks of nails. Let them be made of good stuff and drawn and full size, the casks of the same make with the London casks, not flat hoops."

Here is a letter that might have been written an hour ago, so far as its exhibit of human nature goes:

You will please to Protest the Bill on Beth & keep it by you \* \* \* or will put it into Chauncery, not so much for the Value of the Money, as for the Insult in



Refusing payment. We look upon it very ill usage & beg you will please to Signify so much to him.

Here is a letter that must have been a pleasant one to receive:

We Desire you will please to ship us by very first opportunity Fifteen or Twenty Tons of best Petersburg Hemp. This we want for whale Warps & must be of the very best quality. The last you sent was good, & desire you will keep up to the like goodness, which charge to our accott.

We are in great haste

Gentl

Your most Obedt Servts.

In 1763, in ordering a bill of Nails, he says: " & beg your care that the Nails be well Drawn, the last you sent were extreme Bad, that we met with Difficulty in the sale of them."

His specifications call for:

30 cask 10d Nails,  
20 Do 8d Do  
6 Do 6d Do  
10 Do 4d Do  
10 Do 20d Do

We think it strange to read of the shipment of Coal from England to Boston, but in an early letter he says: "The Ship does not yet appear, but when she arrives, we shall Dispose of the Coals most to your Advantage; it's unlucky there is a great Quantity of Coals in Towne, fear they will not sell immediately."

Following this the business seems to have been a very large one in "Oyle," which Hancock sent to England to be sold on his account; as the business grew he built vessels for it and for the transportation of other merchandise.

In August, 1763, writing to his correspondents in London, he thus mentions business in this country:

Provisions are still high. The Droughts for two years past made a Great Scarcity. Pork is now 15 Dollars pr. Barrel we bought hitherto for you Cheaper, but for the next six months, we must give more, \* \* \* \*

You may Depend we shall on all occasions, act, what we think will be most for your Interest and are,

Sir,

Your most obedt & most Humble Servants.

In October he writes:

This is to Desire you will as soon as possible & without Fall Ship us from Cork 250 Barrels of Best Irish Pork & 100 Firkins of good Irish Butter.

In a later letter Hancock orders a large quantity of Grindstones to be sent to him from England, but he does not forget his own personal adornment while dealing in Pork, Nails, Butter and Grindstones, for he asks:

Our J. H. asks the fav'r that Mr. Harrison will please to get made & sent him 1 neatt Bag wig and 1 neatt Bob wig. Fashionable & of a light color.

He has to call his correspondents to account for some of their shortcomings, and does it in this kindly way:

Give us leave out of friendship just to mention that we think you are not altogether so Regular in Your answers to Letters & Sending accotts of Sales, &c. as is Expected; we have heard many Complaints of that Sort, which is apt to Prejudice Persons against your House.

Here is an extract showing the cautious business mind:

You will duly Notice that we did not Recommend Mrs. How to you for Credit, only for any little Civilities or Services you might please to show her, as she was Distressed.

This same year an advertisement as follows appeared in the Boston paper, and is of interest as showing the variety of business done in that city. The Mr. Rowe, who advertises, was also in the "Oyle" business and is mentioned in Hancock's letters:

From Boston Post Boy, December 19, 1763:

Just imported and to be sold by John Rowe at his store, a few likely negro boys, and two negro men between 20 and 30 years of age, and Also New Castle Coals, Lisbon Salt, Fyal Wine, Quart bottles by the groce, Hemp, Russia and Ravens Duck, etc.

Business panics were to be dealt with in those days, and an extract from a letter of 1765 has very much the tone of 1895. Hancock says in a letter to his London house:

The great uneasiness and Losses here owing to the

failure of some Persons of note has put us all into great anxiety, as trade has met with a most prodigious shock and the greatest losses to some people ever known in this part of the world. I would advise you to be careful who you trust, times are very bad & precarious here & take my word, my good Friends, the times will be worse here, in short such is the situation of things here that we do not know who is and who not safe. I am very sorry that I have wrote for any goods, at least for so many, but I must do the best I can.

He has to complain of overcharges, as who has not? and does it in a very feeling manner.

I rec'd the things you shipd me by Hatch tho' some of them much out of time, say the cheese, & oyl, the cheese I lose money by, Having sold it for less than the first cost & think it Extreme high charged, at least much higher than others had it in the same ship. Mr. Caleb Blanchard had a parcell at the same time @ 33/- & you charged mine 40/-. The difference is a good profit. I think I have a right to Expect my Goods on as good terms as anyone whoever, & unless I can have them so, its not worth my attention. You must not let other houses outdo you, why should there be such a difference in that Article from your two houses? Do think of it & if its a mistake give credit for the over charge.

Here is copy of an order he made for paints:

3 lbs deepest Prussian blue.  
8 lbs best U D Vermillion.  
50 lbs white Copperas.  
20 lbs umber.  
1000 lbs softest Spanish white.  
2 Gro. siz'd Pencils.

He complains that his goods are not shipped according to orders, and he has as little liking for not having his order filled complete as has his successor of to-day:

I am extremely sorry that you did not ship my Lemons on Marshall, as I should then have got 60 stg. & Box whereas, now you have sent them in Scott, they will not fetch me 2 per cent. I wish you would be so good as always to ship me the whole of my orders as I have always a reason for my conduct and order which is only known to myself.

The following extract from a letter announcing the going to England of a relative interests us because of the hearty way in which he writes. This was not a letter of introduction to be handed by the bearer to the firm to which it was written, but was expected to reach the house before the person mentioned in it should arrive:

My particular friend & relation, Mr. William Bowes, is Passenger in Captain Scott, he proposes spending six or eight months in England. I take the freedom to recommend him to your Particular Notice & Civilities wch I doubt not you will cheerfully afford him & which I shall Esteem a favor. He is a gentn. of good mind, Sober, Honest, & Industrious, & very Deserving, & one I have a high opinion of. I wish him a happy sight of you. I refer you to him for all matters stirring here & hope his Visit to you will Establish an agreeable Correspondence with you. I beg the favr. of your best advice & assistance & that you will in all Respects grant him yor. Countenance.

Although Mr. Hancock was doing an immense business he had an eye out for adding to this, and here was his way of soliciting a new account:

I know not what alterations the melancholy event of Mr. Griffith's death may occasion in your concerns here, or perhaps you may have already placed them elsewhere. I mean not to interfere with your connections; but I beg leave to say that if at any time an opportunity may offer, when you can agreeable to yourselves place any concerns with me you may depend on the utmost Despatch, Fidelity, & punctuality & that in any commands you may please to favr. me with you may rely on the greatest attention to your Interests in all Respects. I think I may venture to say no man here can better serve your Interests than myself. You will excuse my mentioning thus much. I heartily wish you every kind of Felicity & whenever I may be useful I beg you freely command—

Gentn.,

Your most faithful & obedt Humble Servt.

This extract gives us a clue to the goods that were going from Boston to England:

This I hope you will Rec'e by the ship Liberty, Henry Smith, Mas'r, who I have Loaded on my own acc't and now Inclose you Invo. & Bill of Lading of cargo on board the Liberty for my own acc't. Say Oyl, Tar, Turpentine, Pottashes, Logwood, & Staves to your address wch I wish may arrive safe & meet a tolerable market. I doubt not your best Endeavours to obtain the best prices & Recommend your Disposing of it as soon

as you can on the best terms that you may be in cash, the Neat proceeds of wch you will please to pass to my credit.

We have seen Hancock as a polite and forbearing merchant, but there came a crisis in his business with his London connection, and a time when plain words were called for, which he was able to use. The provocation must have been very great that called forth this letter:

Your treatment of me has been such as to render you unworthy of my notice, even by my letters. But I shall not take up my time to inveigh against you. Shall only say that you have deviated from as solemn engagement as words could form. My Reliance upon your honor has been the means of my losing at least £500, stg. Your taking the advantage of me, because our agreement was not committed to writing, as we were upon honor, I must tell you is beneath the character of a gentleman & what no man would have been guilty of that had the best notions of honor. I greatly reflect upon myself that I should submit to your Repeated solicitations to form a connection. It was contrary to the advice of my friends who knew you better than I did. \* \* \* I despise you for your conduct towards me & desire no connection with you. You have greatly deceived me, but it shall be the last time. As soon as the ship is sold & her accts. settled & I know what I lose by her I shall then take advice as to Recovering it of you.

I am for form sake, Your Humble Servt.

To a firm with whom he had long dealt, but who seem to have refused him some credit, either for himself or for some of his friends, he writes a long letter, more in pain than in anger, and in it uses these words:

I always chuse Gentn. to be open and explicit. \* \* \* I look on myself as a man of Capital & am not to be put on a footing with every too penny Shop keeper that addresses You. I am greatly amazed at your conduct. I think I am very poorly treated, & I suppose the only instance in town. I doubt not when Scott arrives he will bring Goods for every Shop Keeper that deals with you, & to refuse me Goods Gentn. is what I can't bear. I am ready to pay you every farthing I owe you. You have effected me in the tenderest point.

In December, 1767, he makes an order for:

100 squares of best London glass 18 x 11½ for use of my own House wch. I pray may be of the very best.

In 1769, when the Stamp Act was making trouble between the mother country and her colonies, Hancock orders "50 barrels of very best pistol powder."

In 1772 Hancock is combining business and patriotism, and writes a correspondent:

By next oppory, I shall send you accott. of sales of Your Sugar & Beer. I am now prevented & as I have been for some time & still am so engaged in our General Assembly that I must beg you excuse me that I cannot be more particular but by next will be explicit & particularly reply to your favr.

In November, 1772, he sends an order for,

50 prs Russia Duck.

20 pcs Ravens Duck.

15 tons Best Petersburg Brack Hemp, if low, if not low only half the quantity.

1 Hogsh'd single Refined Sugar.

10 Hampers Best Bottled Porter.

40 half Barrels Powder, pray let it be good.

2 Tons best Cheshire Cheese.

10 Boxes Lemons. 2 Casks of Poland & 10 casks of Common Starch.

Goods are at present sold here so excessively low that I do not import any for my own store, but when there is an alteration I shall apply to you.

A year later, December 21, 1773, he mentions an event that is now known to every school boy, but it is of peculiar interest as forming the subject of a letter between a Boston business man and his English house:

We have been much agitated in consequence of the arrival of the Tea Ships by the East India Comp. and after every effort was made to induce the consignees to return it from whence it came & all having proved ineffectual, in a very few hours the whole of the Tea on Board Bruce, Coffin, & Hall was thrown into salt water. The particulars I must refer you to Capt Scott for; indeed I am not acquainted with them myself, so as to give a Detail. A brig with the remainder of the tea is cast on shore at the back of Cape Codd. Philadelphia & York are Determined the Tea shall not land. No one circumstance could possibly have taken place more effectively to unite the Colonies than this manouvre of the Tea. It is Universally Resented here & people of all ranks detest the measure.

Public duties demanded more and more of Hancock's care. He was elected a member of the General Court of Massachusetts; he was presiding officer of the Boston Town Meeting, and as such became an object of suspicion, having to go into hiding, as General Gage wanted to arrest him and send him a prisoner to England. In 1775 he was elected to the Continental Congress, which met at Philadelphia, and was chosen President of the Congress.

When the Declaration of Independence was ready John Hancock was the first to affix his signature, making that dashing autograph so familiar to us all, and remarking as he did so: "I write so that George the Third may read without his spectacles."

In 1780 he was elected Governor of Massachusetts, re-elected until 1785, then after an interim of two years was re-elected in 1787, serving until his death in 1793, at the age of 56.

## CONTENTS.

	PAGE.
Mammoth Air Compressor for Street Railroad Motors. Illus....	1
The Armor Plate Matter.....	4
Automatic Short Cut Roll Wire Straightener and Cutter. Illus. ....	5
The National Bankruptcy Convention.....	5
The Manufacture of Graphite.....	6
Wage Scale Conferences.....	7
German Rolling Mill Engines.—I. Illustrated.....	8
The Ocean Going Torpedo Boat "Stringham".....	11
Canadian News.....	11
The Sponser Hardening Apparatus. Illustrated.....	12
Lake Superior Iron News.....	13
The Week.....	14
Editorials:	
The Speculation in Industrial Stocks.....	15
Paper Money and Gold Exports.....	16
Reforms in Bar Contracts.....	16
The Annual Farm Implement Contracts.....	17
The Automobile Industry.....	17
The Milwaukee Foundrymen.....	17
Correspondence.....	18
Cost of the Nicaragua Canal.....	18
Obituary.....	18
Personal.....	19
An Addition to the Lake Fleet.....	19
A Tidewater Steel Plant and Rod Mill.....	19
Proposed Advances in Iron Freight.....	20
The Wages Scales.....	20
A Disinterested Opinion on an Anti-Trust Law.....	20
Blast Furnace Building.....	20
The Iron and Metal Trades:	
A Comparison of Prices.....	21
Chicago.....	21
Philadelphia.....	23
Cleveland.....	23
Cincinnati.....	24
Birmingham.....	24
St. Louis.....	25
Pittsburgh.....	25
The English Iron Markets.....	26
The Belgian Iron Market.....	27
New York.....	27
The New York Machinery Market.....	28
Metal Market.....	29
American Plumbers' Supply & Lead Company.....	29
Stocks.....	30
Transfer of the Daimler Mfg. Company.....	30
Manufacturing:	
Iron and Steel.....	31
Machinery.....	31
Bridges.....	32
Hardware.....	33
Miscellaneous.....	32
Trade Publications.....	33
Iron Felt.....	33
Empire Steel & Iron Company.....	33
Hardware:	
Condition of Trade.....	34
Notes on Prices.....	35
Retail Merchants' Mutual Insurance.....	37
Requests for Catalogues, &c.....	37
The Osborn Mfg. Company's Catalogue.....	37
The Chicago Retail Hardware Dealers' Association. Portraits.....	38
Retail Hardware Dealers' Association of Southern Indiana.....	41
John G. Lane. Portrait.....	41
The Hardware Trade in the United States.....	42
A Merchant of the Last Century.....	44
Trade Winning Methods. Illustrated.....	47
Among the Hardware Trade.....	48
Price-Lists, &c.....	49
Seavey's Miter Box and Saw Guide. Illustrated.....	50
Maynard Lawn Mower Sharpener. Illustrated.....	50
The Game Filter Faucet. Illustrated.....	50
Current Hardware Prices.....	51
Current Metal Prices.....	58



## Trade Winning Methods.

*This department will contain a description of approved methods of bringing customers to the store by means of newspaper advertising, circulars and such special expedients and methods as are found useful by enterprising and progressive Hardwaremen.*

*A cordial invitation is extended to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.*

### EFFECTIVE DISPLAY IN ADVERTISEMENTS.

BY WESTERN NEW YORK.

Much depends upon the display of an advertisement. When a good ad. is written, it ought to be displayed in such a manner as to attract attention. The ad. itself should be plain and interesting enough to perform its mission. We will now take it for granted that you have good copy, and are faced with the problem of obtaining good display.

**Too Much Display** is the prevailing fault rather than too little. To this can be attributed the ruination of many an excellent advertisement.

### ARE YOU BUILDING OR REPAIRING?

We have in stock a large assortment of

### Doors, Windows, Sash and Blinds.

A Complete Line of Builders' Hardware,

Building Paper and Carpenters' Tools.

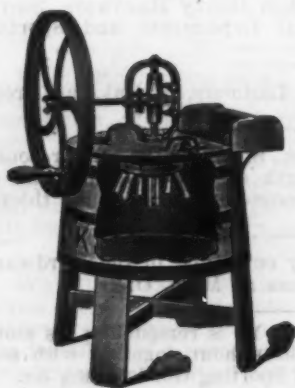
IF YOU CANNOT COME IN, WRITE FOR PRICES.

WARD & WARDNER, Main Street.

Fig. 1.—A Typical Hardware Advertisement.

Fig. 1 may be considered a typical Hardware advertisement, and its fault will be found in the fact that there is *too much display type used*.

**Simplicity.**—Almost every line is set in a separate and distinct face, whereas if only two, or at most three styles had been employed the effect would have been very much



Thorough,  
Practical  
Labor Saving.

Among the greatest labor-saving inventions of the day are the modern washing machines. To be sure, they will not work without aid: they are not automatic, but they are LABOR SAVERS.

More and better work can be done with less exertion upon one of these machines than by hand. They will not tear the clothes. Ask to see the O. K. Washers at

Jones & Johnson's.

Fig. 2.—A Stronger Style.

stronger. The compositor has shown skill in displaying most prominently those lines which the merchant desired to emphasize, and the ad. itself, irrespective of its surroundings in the paper, is fairly prominent. When, however, it is placed

among many others arranged upon exactly the same lines its force is lost.

**Too Much Generality.**—In preparing his copy the merchant has dealt too much in generalities. He has tried to cover too much ground at one leap. Any one of the lines mentioned would furnish enough matter for several interesting, pointed advertisements. No Hardwareman would take a post maul and try to drive a nail at one blow; yet many of them take large space in the papers and try to drive into the public mind a mass of facts which, properly presented, would fill the whole paper.

**Making Ads. Speak.**—Imagine a Hardwareman who would say to a customer, "We've got a complete line of Hardware and Tools and Tinware and Doors and Sash and Blinds."

Hardwaremen don't do that. They're more likely to say "Yes, sir; that Knife is just what you were looking for. It's made by A. B. & Co., one of the best firms in the country. If it breaks from a flaw you just trot it right back here and get a new one. It's fully warranted. The price is \$1.15."

**Talk That Sells Goods.**—It's the latter sort of talk that sells goods, and Hardwaremen know it; yet for some reason or other they don't talk that way in their advertising.

**Stronger Display.**—Compare the display in Fig. 1 with that in Fig. 2. In the latter there are only two styles of type employed, the firm name having been set the same as the heading and the address the same size as the body matter. Which one of these two would you see the more quickly if they were displayed in the same newspaper? Which one would you think, at first glance, conveyed information worth reading?

**The Quoting of Prices** would have strengthened the advertisement in Fig. 2.

It is a noticeable fact that hardware merchants are getting away from the once prevalent notion that price publishing does not pay. With more attention given to the subject of advertising, it is seen that more merchants find it beneficial to publish prices, and the time seems not far distant when the practice will be quite general.

**Simplicity Makes Effectiveness.**—The greatest plainness is often the best display. Ornaments are out of place in most advertising, and the white space that they occupy would often be a far better eye catcher were it left blank. Fig. 3 gives good examples of this sort of display.

**Use of Capitals.**—It is generally considered that headlines are stronger when set in capitals and small letters than when set entirely with capitals. The eye is more accustomed to the former style, and therefore it can be more quickly read and understood.

**Directions to Printer.**—Most merchants are not familiar with the various styles and sizes of type,

and they find it difficult to convey their wishes to the compositor. Many times the printer is left to struggle with a tangled mass of illegible stuff, every line of which is underscored from one to four times. Then he is "blessed" in several different tongues because the result of his efforts is not a creation good to look upon.

**Familiarity with Type.**—It will not pay the average merchant to attempt to memorize the many technicalities of the print shop. He had better find some style somewhere that suits him. Then he can submit a sample of

## The Most for Your Money.

In stove buying, you will always get the most for your money by purchasing FULLER & WARREN goods. They're strongly made, handsomely finished and durable. They're good bakers and heaters. They're the best.

**J. B. STANBROUGH,**  
180 FRONT ST., OWEGO.

## Stoves and Plumbing.

We handle everything in the line of Stoves and Plumbing. Fuller & Warren Stoves are known to be the best. Our Tinning and Plumbing Department is in the hands of thoroughly competent workmen. We sell pure Lead and Oils—the best that money can buy.

**J. B. STANBROUGH,**  
180 FRONT ST., OWEGO.

*Fig 3.—The Effectiveness of Simplicity.*

this style to the printer with a request that he follow it as closely as possible. Many printers issue a style book showing exactly what they have in their outfits. In the cases of some newspapers, each line in the sample book is accompanied by an explanation which tells exactly how many letters can be set in a column width.

**Specifying Style of Type.**—In such instances it is a comparatively easy matter to specify the type styles and sizes, as they can be ordered by their respective numbers.

So much depends upon good display that it will well repay any merchant to give it some little time and attention.

## Among the Hardware Trade.

James W. Hastings and M. V. Smith have entered into partnership in the Hardware business at South Omaha, Neb., succeeding the South Omaha Supply Company, under the style of Smith & Hastings. Mr. Smith was formerly a member of the firm of Holmes & Smith, who went out of business six or seven years ago.

G. W. Maurer & Co., Beatrice, Neb., have incorporated with a capital of \$10,000, to conduct the Hardware, Farm Implement and Carriage and Wagon business.

Blish, Mize & Silliman Hardware Company, wholesale merchants, Atchison, Kan., have rented the quarters adjoining their establishment and have put in a large stock of Guns and Sporting Goods.

J. T. Joyce has opened up in Woodruff, Kan., as successor to C. F. Kline, whose stock has been removed to a new building just completed.

H. A. Steinke, Wallace, Idaho, has removed to new quarters which have double the capacity of his former store. Mr. Steinke states that since his removal trade has increased about 25 per cent. in volume. He remarks that making good use of show windows is decidedly advantageous to the merchant.

Fay & Shandrew have succeeded Geo. Fay, at Kenosha, Wis.

L. D. Adams, Hardware merchant, Thomsonville, Mich., is erecting a new store.

B. W. Canady & Co., have succeeded B. W. Canady in the wholesale and retail Hardware, Implement and Sporting Goods business at Kinston, N. C. They have just completed a warehouse, and will soon commence the erection of a new store, 48 x 80 feet in dimensions.

Dubois Hardware Company have succeeded C. E. Turnbach, at Dubois, Pa.

C. E. Haven & Co., Santa Rosa, Cal., are building a brick addition to their store. The addition will be 40 x 50 feet, and will be used for Heavy Hardware and Farm Implements. They are also putting up an Iron warehouse for the storage of surplus stock. The interior of their establishment will be improved by the installment of new shelving and fixtures.

John Keys has recently embarked in the Hardware line at Protection, Kan.

J. S. Carnal, Arvillr, N. Dak., has put up a new store, of which he is now in possession.

L. H. Gardner has been succeeded by L. H. Gardner & Bro., at Cooper, Texas.

Buelow & Schulze of Columbus, Wis., have purchased the Hardware stock of Max Janisch at Waupun, and will hereafter run stores at both places.

Mr. White has purchased the interest of John Dixon in the firm of Dixon & White, Racine, Wis., and will continue the business under the style of the Dixon-White Hardware Company.

Winston Hardware Company's store at Winston, N. C., was recently damaged by fire and water. Repairs have been made and the business continues as usual.

Nicholson & Fay have succeeded John Nicholson in the general Hardware, Carriage and Harness business at Belmont, N. Y.

McGirr, Ward & Co. are successors to Acker, Rose & Ward at New Lexington, Ohio.

H. E. Sellers is now conducting the business formerly carried on by Stitzel & Sellers at S. Auburn, Neb.

E. M. Fairfield, Osakis, Minn., is building a brick addition, 60 x 65 feet, two and a half stories high, to his store. The enlarged store will be 135 x 65 feet in dimensions. Mr. Fairfield has also remodeled the interior of the store with a view to bringing it up to date in its appointments. Mr. Fairfield embarked in business in 1884, and in addition to a general line of Hardware carries a large assortment of Wagons and Machinery.

G. M. Sadler, Louise, Texas, has closed out his stock of drugs and will hereafter devote his attention solely to the retailing of Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements and Sporting Goods.

J. D. Van Fleet & Co., Larimore, N. Dak., are erecting a new warehouse.

The store of Austin Bros., Stockton, Cal., was recently robbed of about \$200 worth of Cutlery, nearly all of which was subsequently recovered, although the thieves are still at large.

J. M. Filloon has lately embarked in the Hardware, Stove and Tinware business at Moro, Ore.

E. W. Wilcox, Albion, N. Y., is remodeling his store, putting in new shelving throughout, together with new Tool, Gun, Silverware and Sporting Goods cases, &c.

Merton Fuller has disposed of his branch store at Lenox, Mich., to Walter Bates. Mr. Fuller is still in the Hardware and Implement business at Richmond.

R. M. Jenks & Sons have succeeded D. D. Dora & Son in the Hardware and Furniture business at Bedford, Iowa.



Nielander & Co., Lansing, Iowa, have purchased the Hardware business of J. F. Wiehe, and will continue at the old stand. The firm have three stores, one at New Albin and two at Lansing. They conduct a general merchandise business, carrying Shelf and Heavy Hardware, Stoves, Farm Machinery, groceries, dry goods, &c.

R. D. Guthrie of York, N. Y., has purchased the business of George F. Maloney, at Adams, where he is now located.

W. C. Kruger, Newberg, Ore., has just moved into his new building, which presents a floor space, 46 x 70 feet, which will enable him to take better care of his growing business.

Oman Hardware & Lumber Company is the style of a firm who have lately embarked in business at Spokane, Wash., handling Shelf Hardware, Stoves, Tinware, Farm Implements, Vehicles, Paints, Oils, &c.

J. W. Weightman has lately opened a new store at Enid, O. T., carrying Shelf Hardware, Stoves and Tinware, Sporting Goods, &c., to which a line of Heavy Hardware will shortly be added.

R. F. Anderson & Co., who have been in business in New Westminster, B. C., since 1889, have purchased the stock of Alex. Godfrey & Co. The latter store has been specially fitted up for the retail trade and is attractively and conveniently arranged.

The Salem Hardware Company, successors to Crumrine & Kale, Salem, Ohio, have moved to new quarters.

Ohling & Hulburt are a new firm at Albany, Ore. Their line embraces Shelf Hardware, Stoves, Farm Implements and Bicycles.

W. A. Stuart & Co., Livermore Falls, Maine, have recently moved into a handsome new building.

Oleson & Walhus have opened up a new Hardware stock at Mayville, N. Dak.

Pickett & Mudgett have succeeded Holmes, Pickett & Mudgett, Mercer, Mo., Mr. Holmes having disposed of his interest to his partners.

L. Wm. H. Klinkhart, Canajoharie, N. Y., has moved his business to more convenient and attractive quarters.

C. P. Bigley, junior member of Amos Bigley & Son, Rising Sun, Ohio, has purchased the stock of T. F. Carroll at Huntsville.

David Fife is successor to Bussard & Fife at Palestine Ill.

Geo. Greenlee, Jr., has purchased the business of the Gorham Hardware Company, Belvidere, Ill., and has extended it in the lines of steam and hot water heating and plumbing. Mr. Greenlee has materially enlarged his store and buys and sells for cash.

Bucher & Ford, Piney, W. Va., have dissolved partnership, Thomas Bucher being successor at the old stand.

R. M. Dudley, president; John M. Gray, Jr., vice-president, and James H. Sweeney, manager of the retail department, of the Gray & Dudley Hardware Company, Nashville, Tenn., along with Architect George W. Thompson, are visiting the large Hardware houses of the West and East for the purpose of getting points which they desire to embody in their new establishment, which will be up to date in every particular.

Wm. Brinkmann's Sons have succeeded Wm. Brinkmann & Son of Philadelphia, Pa. Some extensive alterations are contemplated in the store, one of them being the installing of a new front, which will give the establishment an attractive exterior.

The Buchanan Hardware Company, who succeeded R. Buchanan & Co., at Richfield Springs, N. Y., have been incorporated, with a capital stock of \$12,000, with E. A. Hinds as president and John A. Losee as secretary and treasurer. The new concern have greatly enlarged their stock and have leased the adjoining store, and now occupy the three floors and basement of the Hinds-Allen

Building. A large store in the rear of the building is used for surplus stock and heavy goods. The main floor of the store has been refitted and an acetylene gas plant installed.

J. P. Goerchus has lately opened a store at Concord, Wash.

Pawley, Bozell & Pawley, Sheldon, Ill., have been succeeded by Pawley & Pawley, Mr. Bozell's interest having been acquired by his former partners.

Wm. F. Lutz Company have succeeded to the Implement and Vehicle business of Newell, Mathews Company, Anaheim, Cal.

Johnson & Flansburg have purchased the stock of Hardware, &c., of R. D. Reeve at Morrowville, Kan.

Some improvements have recently been made in the establishment of Tenk Hardware Company, Quincy, Ill. The main store has a clear height of 14 feet and shelves have been run to the ceiling on each wall and to a length of 90 feet. The west line is assigned to Shelf Hardware, which is kept in oil finished hardwood boxes with samples attached. Five Coburn rolling stepladders are used. The main floor has a depth of 183 feet. The basement is provided with a T-rail track of 23-inch gauge for a heavy platform car used in the rapid handling of Nails, Sash Weights and other heavy goods. A system of house telephones with eight stations connects each department.

The Fischer Iron & Steel Company, Quincy, Ill., occupy a four-story building erected for the rapid and economical handling of Iron and Steel and Heavy Hardware. The house fronts 65 feet and has a depth of 110 feet. The basement has a clear height of 9 feet 6 inches and is kept dry and cool by 8 x 16 inch ventilator shafts.

Robert C. Gunther, Quincy, Ill., now occupies a handsome and commodious building at 505 Hampshire street, which enables him to take better care of his trade than was heretofore possible.

The Cottrell Hardware Company, Quincy Ill., have been forced to increase their quarters, and to properly handle an extending trade have secured the first floor of 126 North Fifth street, which adjoins the building long occupied by them.

Geo. W. Young, Hopkinsville, Ky., will remove in about two weeks to larger and more attractive premises, where he will materially enlarge his stock of Hardware, Stoves, Roofing, Cornices, Glassware, Woodenware, &c.

### Price-Lists, &c.

DETROIT WIRE & IRON WORKS, Detroit, Mich.: Catalogue No. 3 of Wire Goods of every description.

CYCLOID CYCLE COMPANY, Grand Rapids, Mich.: Cycloid Air Gun.

PULLMAN SASH BALANCE COMPANY, Rochester, N. Y.: Pullman Sash Balance, Pullman Door Check and Spring and Baby Pullman Screen Door Check and Spring.

SANDAGE STEEL SKEIN COMPANY, South Bend, Ind.: Skeins, Wagon Hardware, Blacksmith's Tools, &c.

DONOVAN WIRE & IRON WORKS, Toledo, Ohio: Structural and Ornamental Wire and Iron Work.

Joseph Dixon Crucible Company, Jersey City, N. J., and 68 Reade street, New York, exhibited at the late electrical show in Madison Square Garden their graphite products for electricians and electrical industries, including graphite rods or carbons up to 2 inches in diameter and 12 inches in length, with resistance of 1 ohm to 1,000,000 ohms; also graphite for lamp cement for repairing incandescent lamps and a pure soft graphite for dressing commutators and dynamos. An interesting exhibit was a group of crucibles in good condition after severe use. One was used eight times for melting silver at white heat of about 2300 degrees F., each heat lasting three hours, and finally used for melting 100 ounces of gold. Another crucible lasted 40 heats in melting brass at about 1800 degrees F. A third was used ten times for melting silver at about 2300 degrees F. This exhibit was in charge of John H. Baird of the Dixon Company, who entertained many electrical engineers every evening, 2300 engineers having registered during the exhibition, the general attendance averaging about 4000 a night.

### Seavey's Miter Box and Saw Guide.

The accompanying engravings illustrate Seavey's patent miter box and saw guide, manufactured by Thomson, Cheney & Thomson, 8-5 Davis square, Lowell, Mass. The device will do any work within the scope of the ordinary miter box, while so light and compact it is equally

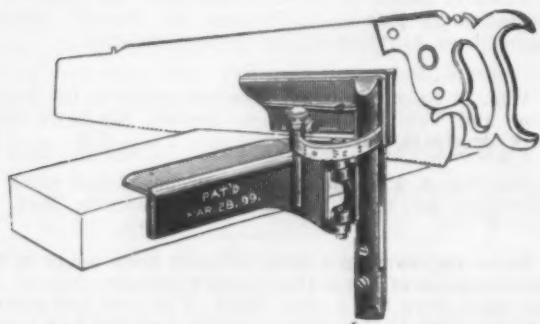


Fig. 1.—Miter Box and Guide, Showing Method of Operation.

effective on bench, horse, building or stage. A feature of the tool is that no special saw is required, any ordinary cross cut saw answering the purpose, while it may be used on material of any width or thickness. This miter box can be applied to the stock to be sawed by placing it on the material and adjusting it so as to secure an exact cut



Fig. 2.—Front View, Showing Space Between Guides.

at any predetermined angle. The implement is made of iron and steel in one size only, finished either in japan or nickel, and weighs 1¾ pounds. It can be compactly folded, so as to occupy little space in tool chest or kit, or can be carried in one's pocket, and the parts are interchangeable. Fig. 1 shows it in position on the wood to be sawed and the method of adjusting the saw guide. Fig.

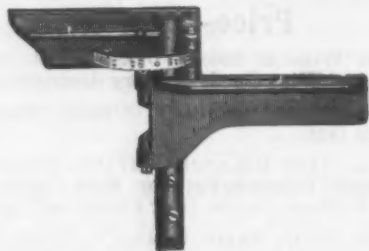


Fig. 3. Back View and Inside of Box as Applied to Stock.

2 is a front view showing the space between the blades. It will be seen that the standards are cut away so as to permit of the movement of the saw teeth without interfering with any metallic part, there being a strip of wood inserted below to prevent injury to the teeth. Fig. 3 is a back view showing the inside of the box, which is to be applied to the stock. In this view is shown the arrangement of the notched segmental arm passing through a slot and over a sharp angle which engages the notch, insuring easy and accurate adjustment.

Boston Belting Company, Boston, Mass., are paying special attention to the manufacture of rubber mats, matting and treads for the use of railroads. Ornamental mats are made in various styles for use in parlor and sleeping cars, with a panel in the center which is removable, so that any initials may be used in connection with the mats. They are made with rough surface backs to prevent them slipping on smooth or polished floors. Car step treads are also made with removable centers. The corrugated matting is designed for covering platforms of vestibule cars, and is made with such initials as desired.

### Maynard Lawn Mower Sharpener.

Bigelow & Dowse Company, 229 Franklin street, Boston, Mass., are offering the Maynard lawn mower sharpener here illustrated. The board has a thick coating of fine emery, and is attached to the bar of the machine, as shown in the illustration. The pressure of the emery coated sharpener on the mower knives is regulated by the center spring, which is shown in detail below. After the sharpener is attached and the spring regulated, a steady forward movement of the mower is said to grind the knives

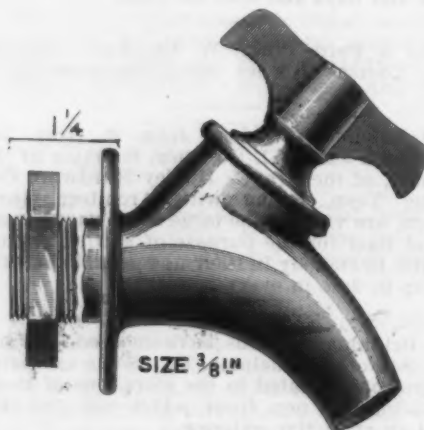


Maynard Lawn Mower Sharpener.

even and true in five or ten minutes. Each sharpener is packed in an individual box, 12 boxes in a case, and can be furnished for 12, 14, 16 and 18 inch mowers.

### The Game Filter Faucet.

The popularity of the Game can faucet has led to its being adapted for water coolers and filters. The new faucet, which is made by J. M. Litchfield, 458 Quincy street, Brooklyn, N. Y., is shown herewith. It has been adapted for the new purpose by lengthening the shank



The Game Filter Faucet.

so that it is now 1¼ inches long, with a long thread and a hexagonal nut. A new nickel polish finish has been adopted for the Game faucets that is well suited to filters and coolers. They are of the ¾-inch size, and well made, so that they work smoothly and are capable of long service without leaking. The faucet is also adapted for use in reservoir ranges.





## Primers—

Berdan Primers, \$1.00 ..... 5¢  
B. L. Caps (Sturtevant Shells) ..... 5¢  
All other primers ..... \$1.00 to \$1.10

Carpet Stretchers—  
See Stretchers, Carpet.

## Cartridges—

B. B. Caps, Con. Ball Sgtd. .... \$1.20  
B. B. Caps, Round Ball, .... \$1.12 to \$1.13  
Blank Cartridges:  
22 C. P., \$5.50 ..... 5¢  
22 C. P., \$7.00 ..... 5¢  
22 cal. Rim, \$1.50 ..... 5¢  
22 cal. Rim, \$2.75 ..... 5¢  
Central Fire ..... 15¢ to 25¢  
Pistol and Rifle ..... 25¢ to 50¢  
Primed S. & L. and Bullets ..... 15¢ to 25¢  
Rim Fire Sporting ..... 50¢ to 75¢  
Rim Fire, Military ..... 15¢ to 25¢

Carpet Sweepers—  
See Sweepers, Carpet.

## Casters—

Bed Plate, etc. .... 60¢ to 10¢ to 70¢ to 5¢  
Martin's Patent (Phoenix) ..... 60¢ to 40¢ to 5¢  
Payson's Anti-Friction Furniture ..... 70¢ to 10¢ to 5¢  
Payson's Anti-Friction Truck, 60¢ to 10¢ to 5¢  
Standard Ball Bearing ..... 50¢  
Tucker's Patent, low list ..... 50¢ to 50¢ to 5¢

Cattle Leaders—  
See Leaders, Cattle.

## Chain—

American Coil, Cask Lots:  
3-16 ¼ 6-16 ¾ 7-16 ¾ 9-16 ¾  
\$7.50 5.65 4.65 4.00 3.85 3.70 3.65  
¼ ¾ 1 inch.  
\$3.55 3.50 3.40 3.10  
Less than Cask lots add 1-10c. per lb.  
German Coil, list July 24, '97 ..... 60¢ to 10¢ to 60¢ to 10¢ to 5¢  
German Hatter Chain, list July 24, '97 ..... 60¢ to 10¢ to 60¢ to 10¢ to 5¢  
Trace, Wagon and Fancy Chains, list April, '98 ..... 60¢ to 10¢ to 60¢ to 10¢ to 5¢  
Jack Chain, list July 10, '98 ..... 70¢ to 10¢ to 70¢ to 10¢ to 5¢  
Iron ..... 70¢ to 10¢ to 70¢ to 10¢ to 5¢  
Brass ..... 50¢ to 10¢ to 50¢ to 10¢ to 5¢  
Gal. Pump Chain ..... 10¢ to 10¢ to 10¢ to 10¢ to 5¢  
Breast, Hitching and Rein Chains  
Covert Sd. Works ..... 70¢  
Covert Mfg. Co.:  
Breast ..... 45¢ to 3¢  
Halter ..... 45¢ to 3¢  
Rein ..... 45¢ to 3¢  
Stallion ..... 45¢ to 3¢  
On-the-Community:  
Niagara and Eureka Welding Co. 1 ..... 55¢ to 65¢ to 10¢  
Niagara and Eureka Welding Co. 2 ..... 55¢ to 65¢ to 10¢  
American Coil and Halters ..... 55¢ to 65¢ to 10¢  
American Cow Ties ..... 50¢ to 10¢ to 50¢ to 10¢ to 5¢

## Chalk—(From Jobbers.)

Carpenters', Blue ..... gro. 50¢ to 50¢  
Carpenters', Red ..... gro. 15¢ to 17¢  
Carpenters', White ..... gro. 40¢ to 40¢  
See also Crayons.  
Chalk Lines—See Lines.  
Checks, Door—  
Bardsley's ..... 40¢  
Columbus ..... 50¢ to 10¢  
Eclipse ..... 50¢ to 10¢  
Chisels—  
Socket Framing and Firmer  
Standard List ..... 75¢ to 10¢ to 75¢ to 10¢ to 5¢  
Buck Bros. ..... 30¢  
Charles Buck ..... 30¢  
L. & J. J. White ..... 30¢ to 30¢ to 30¢  
Tanged and Miscellaneous.  
Tanged Firmers ..... 40¢ to 10¢ to 50¢  
Cold Chisels, good quality lb. 12 to 16c  
Cold Chisels, fair quality ..... lb. 12c  
Cold Chisels, ordinary ..... lb. 7 to 9c  
Buck Bros. ..... 30¢  
Charles Buck ..... 30¢  
L. & J. J. White, Tanged ..... 40¢ to 3¢

## Chucks—

Beach Pat., each \$8.00 ..... 20¢  
Morse's Adjustable, each \$7.00 ..... 25¢  
Skinner Patent Chucks:  
Combination Lathe Chucks ..... 40¢  
Independent Lathe Chucks ..... 40¢  
Improved Planer Chucks ..... 20¢  
Universal Lathe Chucks ..... 40¢  
Union Mfg. Co.:  
Combination ..... 40¢  
Clear Drill ..... 30¢  
Geared Scroll ..... 30¢ to 3¢  
Independent ..... 40¢  
Union Drill ..... 30¢  
Universal ..... 40¢  
Face Plate Jaws ..... 35¢  
Clamps—  
Adjustable, Hammers ..... 20¢ to 20¢ to 5¢  
Adjustable, Stearns' ..... 30¢ to 30¢ to 10¢  
Cabinet, Sargent ..... 45¢ to 10¢ to 50¢ to 10¢  
Carriage Makers', Sargent's ..... 40¢ to 10¢  
Carriage Makers', Sargent's ..... 50¢ to 10¢ to 50¢ to 10¢ to 5¢  
Reedy, Parallel ..... 33¢ to 3¢  
R. I. Tool Co.'s Wrought Iron ..... 25¢  
Saw Clamps, see Files, Saw Filers  
Saw ..... 75¢ to 75¢ to 5¢  
Stearns Steel ..... 25¢ to 10¢  
U. S. Lock Co. .... 40¢ to 10¢ to 40¢ to 10¢ to 5¢

## Cleaners, Walk—

Star Socket, All Steel ..... \$4.00 net  
Star Shank, All Steel ..... \$3.75 net

## Cleavers, Butchers—

Poster Bros. Flat Hds., 30¢; Rd. Hds., 40¢  
New Haven Edge Tool Co.'s ..... 40¢  
Nichols Bros., Flat hdl., 30¢; Rd. hdl., 40¢  
Payette R. Plumb ..... 33¢ to 3¢ to 10¢  
L. & J. J. White ..... 25¢

## Clippers—

Chicago Flexible Shaft Company:  
Handy Toilet ..... \$7.20  
Mascoite Toilet ..... \$8.40  
Monitor Toilet ..... \$9.00  
Stewart's Patent ..... \$10.00

## Clips, Axle—

Eagle and Superior ¼ and 5-16 inch ..... 75¢ to 10¢ to 75¢ to 10¢ to 5¢  
Norway, ¼ and 5-16 inch ..... 75¢ to 10¢ to 5¢

Cloth and Netting, Wire—  
—See Wire, etc.

## Cocks, Brass—

Hardware list (Globe, Kerosene, Lever Bibbs, Racking, etc.) ..... 70¢ to 70¢ to 5¢

## Coffee Mills—See Mills, Coffee.

## Collars, Dog—

Brass, Pope & Stevens' list ..... 40¢  
Embossed, Gilt, Pope & Stevens' list ..... 30¢ to 10¢  
Leather, Pope & Stevens' list ..... 40¢

## Compasses, Dividers, &amp;c.

Ordinary Goods ..... 70¢ to 10¢ to 75¢  
Bemis & Call Hdw. & Tool Co.:  
Dividers ..... 65¢  
Callipers, Call's Patent Inside ..... 55¢  
Callipers, Double ..... 70¢  
Callipers, Inside or Outside ..... 70¢  
Callipers, Wing ..... 60¢  
Compasses ..... 50¢ to 5¢  
J. Stevens A. & T. Co. .... 25¢ to 10¢

## Coolers, Water—

A. S. & Co.: 2-gal., \$2.70; 3-gal., \$3.20;  
4-gal., \$3.60; 6-gal., \$4.75; 8-gal., \$7.20; 11-gal., \$11; 14-gal., \$14 each 50¢

## Coopers' Tools—

See Tools, Coopers'.

## Cord— Sash—

Braided, Drab ..... lb. 25¢ to 25¢  
Braided, White, lb. ..... 15¢ to 20¢  
Cable Laid Italian, lb. A, 18c; B, 16c  
Common India ..... lb. 8¢ to 9¢  
Cotton Sash Cord, Twisted ..... 10¢ to 15¢  
Patent Russia ..... lb. 18¢ to 15¢  
Cable Laid Russia ..... lb. 15¢ to 11c  
India Hemp, Braided, lb. 14¢ to 15¢  
India Hemp ..... lb. 9¢ to 10¢  
Patent India ..... lb. 10¢  
Pearl Braided, cotton ..... lb. 16¢  
Massachusetts, White ..... lb. 18¢  
Edystone Braided Cotton ..... lb. 18¢  
Harmony Cable Laid Italian ..... lb. 18¢  
Ostrawan Mills:  
Crown, Solid Braided White ..... lb. 18¢  
Braided, Giant, White ..... lb. 16¢  
Peerless:  
Cable Laid Italian ..... 16¢  
Cable Laid Russian ..... 15¢  
Cable Laid India ..... 11c  
Braided India ..... 18¢  
Samson:  
Braided, Drab Cotton ..... lb. 38¢ to 35¢  
Braided, Italian Hemp ..... lb. 31¢ to 35¢  
Braided, Linen ..... lb. 53¢ to 55¢  
Braided, White Cotton ..... lb. 27¢ to 30¢  
Silver Lake:  
A quality, Drab, 40¢ ..... 15¢ to 10¢  
A quality, White, 55¢ ..... 15¢ to 10¢  
B quality, Drab, 55¢ ..... 15¢ to 10¢  
B quality, White, 30¢ ..... 15¢ to 10¢  
Italian Hemp, 40¢ ..... 15¢ to 10¢  
Linen, 57¢ ..... 15¢ to 10¢

## Wire, Picture—

Braided or Twisted ..... 35¢ to 35¢ to 5¢

## Corn Knives and Cutters

—See Knives, Corn.

## Crackers, Nut—

Acme, Japanned, \$ gr. \$30 ..... 40¢  
Acme, Nickel Plated, \$ gr. \$30 ..... 20¢  
Turner & Seymour Mfg. Co. .... 50¢

## Cradles—

Grain ..... 5¢

## Crayons—

White Round Crayons, gross ..... 5¢ to 6¢  
Cases, 100 gro., \$4.50 to \$5.00, at factory.  
D. M. Steward Mfg. Co.:  
Metal Workers' \$ gr. \$2.50 ..... 20¢ to 25¢  
Railroad, \$ gr. \$2.00 ..... 20¢ to 25¢  
Rolling Mill, \$ gr. \$2.50 ..... 20¢ to 25¢  
Soapstone Pencils, \$ gr. \$1.50 ..... 30¢ to 35¢  
See also Chalk.

## Creamery Pails—See Pails.

## Creamery.

## Crooks, Shepherds—

Port Madison, Heavy ..... \$7.00  
Port Madison, Light ..... \$6.50

## Crow Bars—See Bars, Crow.

## Cultivators—

Victor Garden ..... \$10.00

## Curry Combs—

See Combs, Curry.

## Cutters— Meat—

American ..... 30¢  
Nos. 2, 3, 4, 5 ..... 8¢  
Each ..... \$5 \$7 \$10 \$25 \$50 \$80  
Enterprise ..... 25¢ to 25¢ to 75¢  
Nos. 5, 10, 12, 18, 24, 30  
Each ..... \$3 \$3 \$3.50 \$4 \$5  
Dixson's, \$ doz. ..... \$3.25  
Nos. 2, 3, 4 ..... 4¢  
Hale's, \$ doz. ..... \$17.00 \$10.00 \$30.00  
Nos. 11, 12, 13 ..... 70¢ to 70¢ to 5¢  
Home No. 1, \$ doz. ..... \$27.00 \$33.00 \$45.00  
Little Giant, \$ doz. ..... \$30.00 \$40.00  
Nos. 305, 310, 312, 320, 323  
\$35.00 \$48.00 \$44.00 \$72.00 \$68.00

Miles' Challenge, \$ doz. .... 45¢ to 45¢ to 10¢  
Nos. 1, 2, 3 ..... 2  
New Triumph No. 605, \$ doz. .... \$22.00 \$30.00 \$40.00  
Nos. 100, 150 ..... 150  
Woodruff's, \$ doz. .... 38¢ to 25¢  
Nos. 100, 150 ..... 150  
Chadborn's Smoked Beef Cutter, \$ doz. .... \$15.00 \$18.00  
Enterprise Beef Shavers ..... 25¢ to 30¢

## Saw and Kraut—

Henry Dias on & Son:  
Saw, Corn Grater, &c. .... 40¢  
Kraut Cutters 24 x 7, 30 x 8, 30 x 9, 55¢  
Kraut Cutters 36 x 12, 40 x 12 ..... 40¢  
Tucker & Dorsey Mfg. Co.:  
Kraut Cutters ..... 50¢ to 50¢ to 10¢  
Saw Cutters, 1 Knife, \$ gr. .... \$15¢ to \$18¢  
Saw Cutters, 2 Knife, \$ gr. .... \$20¢ to \$27¢

## Tobacco—

All Iron, Cheap ..... doz. \$4.50 to \$5.00  
Enterprise ..... 25¢ to 30¢  
National, \$ doz. ..... \$21.00 ..... 30¢ to 5¢  
Sargent's, \$ doz. ..... \$24.00 ..... 60¢ to 60¢ to 10¢

## Washer—

Appleton's, \$ doz. ..... \$16.00 ..... 60¢ to 10¢ to 60¢ to 10¢ to 10¢  
Bonney's ..... \$ doz. ..... \$4.25

## Diggers, Post Hole, &amp;c.—

Iwan's Improved Post Hole Auger, 40¢ to 5¢  
Iwan's Perfection Post Hole Digger ..... \$ doz. \$10.00  
Samson, \$ doz. ..... \$34.00 ..... 25¢

## Dividers—See Compasses.

## Dog Collars—See Collars, Dog.

## Door Checks—

See Checks, Door.

## Door Springs—

See Springs, Door.

## Drawers, Money—

Tucker's Pat. Alarm Ttl No. 1, \$ doz. .... \$18; No. 2, \$12; No. 3, \$11; No. 4, \$12.

## Drawing Knives—

See Knives, Drawing.

## Drills and Drill Stocks—

Common Blacksmiths' Drill, each ..... \$1.50  
Blacksmiths' Self-feeding, each ..... \$5.00 to \$6.00  
Bench Drills, Stearns' ..... 50¢ to 50¢ to 10¢  
Breast, Millers Falls, each \$3.00 ..... 25¢  
Breast, P. S. & W. .... 40¢ to 10¢  
Goodell Automatic Drills, 40¢ to 50¢ to 10¢  
Ratchet, Bignall & Keeler ..... 30¢ to 5¢  
Ratchet, Curtis & Curtis ..... 25¢  
Ratchet, Ingalls' ..... 25¢  
Ratchet, Parker's ..... 40¢  
Ratchet, Weston's ..... 20¢ to 25¢  
Ratchet, Whitney's ..... 30¢ to 10¢  
Whitney's Hand Drill, No. 1, \$10.00;  
Adjustable, No. 10, \$12.00 ..... 33¢ to 5¢  
Twist Drills—  
Standard List ..... 60¢ to 10¢ to 10¢ to 70¢

## Drill Bits or Bit Stock

Drills—See Augers and Bits.

## Drill Chucks—See Chucks.

## Dripping Pans—

See Pans, Dripping.

## Drivers, Screw—

Balsey's Screw Holder and Driver, \$ doz. .... 24-inch, \$8; 4-in., \$7.50 6-in., \$8.40¢  
Buck Bros. ..... 30¢  
Buck Bros' Screw Driver Bits ..... 27¢ to 40¢ to 10¢  
Champion ..... 40¢ to 10¢  
Diet's Flat Blade, Elec. ric ..... 10¢  
Douglas Mfg. Co. .... 30¢ to 20¢ to 15¢  
Electric Spiral ..... 50¢ to 10¢ to 50¢  
Elmhurst's Socket ..... 40¢ to 10¢  
Fray's Hol. H'dle Sets, No. 3, \$12.00 ..... 50¢  
Gay & Parsons' Ratchet ..... 35¢  
Goodell's Automatic ..... 50¢ to 10¢ to 50¢ to 10¢ to 50¢  
Howard-Allard Spiral ..... 50¢ to 10¢ to 50¢  
Jones Reversible ..... 50¢  
Mayhew's Black Handle ..... 50¢  
Mayhew's Monarch ..... 45¢ to 10¢  
New England Specialty Co. .... 50¢ to 10¢  
New York, Manhattan and Handy ..... 30¢  
Sargent & Co.'s:  
Nos. 1, 20, 40 and 60, 50¢ to 10¢ to 50¢ to 10¢ to 50¢  
Nos. 50 and 55 ..... 50¢ to 10¢ to 50¢ to 10¢ to 50¢  
Screw Driver Bits ..... \$ doz. 50¢ to 70¢  
Stanley's R. & L. Co.'s:  
No. 64, Varnished Handles ..... 70¢ to 10¢  
No. 58 ..... 75¢ to 10¢

## Egg Beaters—See Beaters, Egg.

## Emery—Nos. 4 to 54 to Flour, CF:

40 gro. 150 gro. F.F.F.  
Kegs ..... lb. 4¢ 5 c 3 c  
¼ Kegs ..... lb. 4¢ 5 c 3 c  
¼ Kegs ..... lb. 5 c 3 c 3 c  
10-lb. cans, 10  
in case ..... 6 c 3 c 3 c  
10-lb. cans, less  
than 10 ..... 10 c 10 c 8 c

## Enameled and Tinned Ware—See Ware, Hollow.

## Escutcheon Pins—

See Pins, Escutcheon.

## Extractors, Lemon Juice—

—See Squeezers, Lemon.

## Fasteners, Blind—

Zimmerman's ..... 50¢ to 10¢

## Faucets—

Cork Lined ..... 70¢ to 50¢ to 70¢ to 10¢ to 5¢  
Metallic Key, Leather Lined ..... 65¢ to 10¢ to 70¢  
Red Cedar ..... 50¢ to 50¢ to 10¢  
B. & L. B. Co.:  
West's Lock, Open and Shut Key 50¢ to 10¢  
John Sommer's Peerless Tin Key ..... 40¢  
John Sommer's Boss Tin Key ..... 50¢  
John Sommer's No Brand Metal Key, 60¢  
John Sommer's W. P. Metal Key ..... 40¢  
John Sommer's Diamond Lock ..... 40¢  
John Sommer's L. X. L. Cork Lined ..... 50¢  
John Sommer's Reliable Cork Lined, 60¢  
John Sommer's Common Cork Lined, 70¢  
John Sommer's Chicago Cork Lined, 60¢  
John Sommer's O. K. Cork Lined ..... 50¢  
John Sommer's Perfection Cedar ..... 40¢  
Star, Metal Plug, new list ..... 40¢ to 60¢ to 5¢  
Stearns' Wood, No. 200, Wood-lined Key ..... 50¢ to 10¢  
Stearns' Matchless, Wood, No. 300 ..... 60¢  
Stearns' Gem, Wood, No. 400 ..... 60¢ to 10¢  
Lockport, Metal Plug, reduced list, 60¢ to 5¢  
Enterprise, \$ doz. ..... \$36.00 ..... 40¢  
Lane's, \$ doz. ..... \$36.00 ..... 33¢ to 5¢  
National Measuring, \$ doz. ..... \$36.00, 33¢ to 5¢

## Felloe Plates—

See Plates, Felloe.

## Files—Domestic—

Best Brands ..... 70¢ to 70¢ to 10¢ to 10¢  
Good Brands ..... 75¢ to 10¢ to 80¢ to 5¢  
Fair Brands ..... 80¢ to 5¢ to 80¢ to 10¢  
Second Quality ..... 80¢ to 10¢ to 85¢  
Now—Revised list adopted June 1, 1898, but old list still generally used by jobbers.  
Imported—  
Stubs' Tapers, Stubs' list, July 24, '97 ..... 30¢ to 33¢ to 4¢  
Fixtures, Grindstone—  
Net Prices:  
Inch ..... 15 17 19 21 23  
Per doz. \$2.50 2.60 2.95 3.55 4.50  
Stowell's Giant Grindstone-Hansner ..... \$ doz. \$8.00 to \$7.00  
P. S. & W. Co. .... 50¢ to 10¢ to 50¢ to 10¢ to 10¢  
Reading Hardware Co. .... 30¢ to 20¢ to 10¢  
Sargent's Patent ..... 70¢ to 10¢ to 70¢ to 10¢ to 10¢

## Fluting Machines—

See Machines, Fluting.

## Fodder Squeezers—

See Squeezers, Fodder.

## Forks—

Old, or 1895 list.  
Hay, Manure, &c. 60¢ to 10¢ to 60¢ to 10¢ to 5¢  
1898, or High list.  
Hay, 2 time ..... 70¢ to 2¢  
Hay, 3 time ..... 70¢ to 2¢  
Manure, 4 time ..... 60¢ to 20¢ to 2¢  
Manure, 5 and 6 time ..... 70¢ to 10¢ to 2¢  
Spading ..... 70¢ to 15¢ to 2¢  
Victor, Hay ..... 60¢ to 33¢ to 2¢ to 2¢  
Victor, Manure ..... 75¢ to 15¢  
Victor, Header ..... 70¢ to 12¢ to 2¢  
Champion, Hay ..... 70¢ to 10¢ to 2¢  
Champion, Manure ..... 5¢ to 2¢  
Columbia, Hay ..... 70¢ to 7¢ to 2¢  
Columbia, Manure ..... 75¢ to 2¢ to 2¢  
Columbia, Spading ..... 60¢ to 25¢ to 2¢  
Haywey Wood Barley 4 time \$ doz. \$5.00; 6 time, \$5.50.  
Plated—See Spoons.

## Frames—

Saw—  
Red, Polished and Varnished, doz. \$1.00 to \$1.10  
White ..... gro. \$3.25 to \$3.50

## Screens, Window and Door—

Bonanza Window Screens ..... 60¢ to 60¢ to 25¢  
Phillips' Window Screen Frames, 60¢ to 5¢  
Porter's Extension Window Screens ..... 60¢ to 5¢  
Stearns' Frames and Corners 25¢ to 25¢ to 10¢  
Stearns' Monarch Adjustable Window Screens ..... 50¢  
Stearns' Gem Window Screen Frames ..... 25¢ to 10¢  
Wabash Adj. Window Screen ..... 50¢  
Warner's Screen Corner Irons, 33¢ to 10¢

## Freezers, Ice Cream—

Qts. 2 3 4 6 8 10  
Best, \$1.50 1.60 1.85 2.20 3.00 3.50  
Good \$1.25 1.35 1.70 2.05 2.65 3.50  
Fair, \$1.00 1.20 1.50 1.75 2.30 3.20

## Fruit and Jelly Presses—

See Presses, Fruit and Jelly.

## Fry Pans—See Pans, Fry.

## Fuse—

Per 1000 Feet.  
Hemp Fuse ..... \$2.80  
Cotton Fuse ..... 2.90  
Single Taped Fuse ..... 3.50  
Double Taped Fuse ..... 4.70  
Triple Taped Fuse ..... 5.70

## Gates, Molasses and Oil—

Stebbin's ..... 80¢ to 20¢ to 85¢  
Stearns' Molasses and Oil ..... 30¢ to 10¢

## Gauges—

Barrett's Comb. Roller Gauge ..... \$ doz. \$6.75 to 7.25

## Marking, Mortise, etc.—

Stanley R. & L. Co.'s Butt & Rabbit Gauge ..... 33¢ to 10¢

## Wire, Brown &amp; Sharpe's—

Wire, Morse's ..... 25¢  
Wire, P. S. & W. Co. .... 10¢ to 10¢  
Wire, Wheeler, Maiden & Co. .... 10¢



**Glimlets—**

Nail, Metal, Assorted, gro. \$3.00 @ \$5.50  
Spike, Metal, Assorted, gro. \$3.75 @ \$4.00  
Nail, Wood Handled, Assorted, gro. \$1.30  
Spike, Wood Handled, Assorted, gro. \$1.90

**Glass, American Window**

List Jan. 1, 1898.

Small lots from store:  
Eastern.....80¢ @ 90¢  
Western.....80¢ @ 85¢  
From Factory, with Frt. Allowance:  
Carloads.....80¢ @ 90¢  
1000 boxes or more, Gulf Ports.....85¢ @ 100¢  
3000 boxes or more.....85¢ @ 85¢  
5000 boxes or more.....85¢ @ 85¢

**Glue—Liquid, Fish—**

List A, Bottles or Cans, with Brush.....77¢ @ 80¢  
List B, Cans (1/2 pts., pts., qts.).....35¢ @ 40¢  
List C, Cans (1/2 gal., gal.).....25¢ @ 45¢

**Glue Pots—See Pots, Glue.****Grease, Axle—**

Allerton's Axle:  
1 lb. Tins, 5 gr.....\$9.00  
3 lb. Tins, 5 gr.....\$9.00  
10 lb. Tins, 5 gr.....\$9.00  
25 lb. wood pails.....\$12.00  
Dixon's Everlasting, in bxs., 5 gr.....\$1.30  
Dixon's Everlasting, in bxs., 5 gr.....\$1.30  
Lower grades, special brands.....\$5.00 @ \$5.50

**Grindstone Fixtures—**

See Fixtures, Grindstone.

**Gun Powder—See Powder.****Hack Saws—See Saws.****Hafts, Axl—**

Peg Patent, Leather Top.....\$1.20  
Peg Patent, Plain Top.....\$1.45  
Sewing, Brass Ferrule.....\$1.50  
Saddlers' Brass Ferrule.....\$1.35  
Peg, Common.....\$1.25  
Brad, Common.....\$1.35

**Halters and Ties—**

Covert Mfg. Co., Web and Rope.....45¢ @ 50¢  
Covert's Saddlery Works', 96 list.....70¢

**Hammers—****Handled Hammers—**

Heller's Machinists'.....40¢ @ 45¢  
Magnetic Tack, Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

**Heavy Hammers and Sledges—**

1 lb. and under.....1 lb. 50¢ @ 75¢ @ 100¢  
1 lb. to 5 lb.....1 lb. 50¢ @ 80¢ @ 100¢  
Over 5 lb.....1 lb. 50¢ @ 80¢ @ 100¢  
Wilkinson's Smiths'.....\$4.00 @ 100¢ lb.

**Handcuffs and Leg Irons**

See Police Goods.

**Handles—****Agricultural Tool Handles—**

Hoe, Rake, Fork, etc., 60¢ @ 100¢ @ 100¢  
Shovel, etc., Wood D Handle.....60¢ @ 100¢

**Cross-Cut Saw Handles—**

Atkins'.....40¢  
Champion.....45¢ @ 45¢  
Dixson's.....50¢  
My's Perfection.....\$2.00 @ 30.00

**Mechanics' Tool Handles—**

Auger, assorted.....\$2.25 @ \$3.50  
Auger, large.....\$2.75 @ \$3.00  
Brad Axl.....\$1.40 @ \$1.50

**Chisel Handles:**

Apple Firmer, gro. ass'd.....\$2.25 @ \$3.50  
\$2.50; large, \$3.75 @ \$5.00  
Hickory Firmer, gro. ass'd.....\$2.25 @ \$3.50  
\$2.50; large, \$3.75 @ \$5.00  
Socket, gro. ass'd, Firmer.....\$1.50 @ \$2.75  
\$1.80; Framing, \$2.50 @ \$2.75  
File, assorted.....gro. \$1.00 @ \$1.25  
Hammer, Hatchet, Axe, etc.....50¢ @ 100¢  
Hoe, Rake and Fork.....60¢ @ 100¢ @ 100¢  
Shovel and Spade, Wood D Handle.....60¢ @ 100¢  
Hard Saw, Varnished, doz. 75¢ @ 90¢  
Not Varnished.....55¢ @ 60¢  
Plane Handles:  
Jack, doz. \$2.25 @ \$2.50; Jack Bolted.....55¢ @ 60¢  
Fore, doz. 35¢ @ 50¢; Fore, Bolted.....70¢ @ 75¢

**Hangers—**

Barn Door, New Pattern, Round Groove, Regular:  
Inch.....\$1.25 @ 1.50 @ 1.75 @ 2.00  
Dox.....\$1.25 @ 1.50 @ 1.75 @ 2.00  
Barn Door, New England Pattern, Check Back, Round Groove, Regular:  
Inch.....\$1.25 @ 1.50 @ 1.75 @ 2.00  
Dox.....\$1.25 @ 1.50 @ 1.75 @ 2.00

**Bigelow & Dowse Co.:**

Paragon, No. 1, \$3.50; No. 2, \$4.50;

No. 3, \$5.50 @ doz.

Chicago Spring Butt Co.:

Friction.....35¢ @ 35¢ @ 100¢

Oscillating.....35¢ @ 35¢ @ 100¢

Big Twin.....35¢ @ 35¢ @ 100¢

Chisholm &amp; Moore Mfg. Co.:

Advance.....60¢ @ 100¢

Cleveland.....60¢ @ 100¢

Baggage Car Door.....50¢

Elevator.....40¢

Railroad.....55¢

Lane Bros.:

Parlor, Standard.....40¢ @ 100¢

Barn Door, Standard.....60¢ @ 100¢

Covered.....60¢ @ 100¢

Cycle, # doz. \$12.00.....35¢ @ 55¢

No. 50.....60¢ @ 55¢

Parlor Door, New Model.....40¢ @ 55¢

Lawrence Bros.:

Crown.....60¢ @ 100¢

New York.....60¢ @ 100¢ @ 100¢

Sterling Mfg. Co.:

No. 2, Standard, #18.....60¢ @ 100¢

No. 1, Special, #13.....60¢ @ 100¢

E. C. Stearns &amp; Co.:

Davis Parlor Door.....50¢ @ 50¢ @ 55¢

Gen Parlor Sliding Door.....50¢ @ 100¢

Challenge.....50¢ @ 50¢ @ 55¢

Steel Single Track Parlor, #6.....50¢

Royal Parlor Door.....50¢

Warner's Pat.....30¢ @ 100¢

Warner's Imp'd Single.....40¢ @ 100¢

Stowell Mfg. and Foundry Co.:

Badger.....60¢ @ 100¢

Baggage Car Door.....35¢ @ 40¢

Climax Anti-Friction.....55¢ @ 55¢

Elevator.....40¢

Interstate.....50¢ @ 100¢

Magie.....50¢ @ 100¢

Machless.....60¢ @ 100¢

Nashen.....60¢ @ 100¢

Parlor Door.....50¢ @ 100¢

Railroad.....55¢ @ 55¢

Street Car Door.....50¢ @ 100¢

Steel, Nos. 300, 400, 500.....45¢ @ 15¢

Wild West.....50¢ @ 55¢

Zenith for Wood Track.....55¢ @ 55¢

Taylor &amp; Boggis Foundry Co.:

Kiddler's.....50¢ @ 50¢ @ 100¢

Van Wagoner &amp; Williams Hdw Co.:

American Trackless.....35¢ @ 15¢

Wilcox Mfg. Co.:

Aurora Steel Endless.....60¢

Bike Roller Bearing.....60¢ @ 100¢

Bike Steel Endless.....60¢ @ 100¢

C. J. Roller Bearing.....60¢ @ 100¢

Cyclo Ball Bearing.....60¢ @ 100¢

Dye Steel.....60¢ @ 100¢

Economical Single Track.....50¢ @ 100¢

L. T. Roller Bearing.....70¢

New Era.....50¢ @ 100¢

New Richard.....60¢

R. E. Roller Bearing.....70¢

Pride Improved.....60¢ @ 100¢

Richards' Improved.....60¢ @ 100¢

Richards' Single Track.....50¢ @ 100¢

Wilcox Dwarf Roller Bearing.....50¢ @ 100¢

Wilcox-Ives.....60¢ @ 100¢

Wilcox Tandem Roller Bearing.....60¢ @ 100¢

Wilcox Trolley Ball Bearing.....40¢ @ 100¢

Wilcox Trolley Roller Bearing.....50¢

Wood Trolley Roller Bearing.....50¢

Wood Track.....60¢

**Harness Menders—See Menders.****Harness Snaps—See Snaps.****Hasps—**

McKinney's Perfect Hasp, # doz. \$1.10

Wrought Hasps, Staples, &amp;c.—See

**Wrought Goods.****Hatchets—**

Best Brands.....10¢ @ 15¢ @ 50¢ @ 55¢

Cheaper Brands.....60¢ @ 100¢ @ 60¢

**Hay and Straw Knives—**

See Knives.

**Hinges—****Blind Hinges—**

Lull &amp; Porter:

No.....1 1/4 3/4 5/8 1 1/2 1 3/4 2 1/4 3 1/4 4 1/4 5 1/4 6 1/4 7 1/4 8 1/4 9 1/4 10 1/4 11 1/4 12 1/4 13 1/4 14 1/4 15 1/4 16 1/4 17 1/4 18 1/4 19 1/4 20 1/4 21 1/4 22 1/4 23 1/4 24 1/4 25 1/4 26 1/4 27 1/4 28 1/4 29 1/4 30 1/4 31 1/4 32 1/4 33 1/4 34 1/4 35 1/4 36 1/4 37 1/4 38 1/4 39 1/4 40 1/4 41 1/4 42 1/4 43 1/4 44 1/4 45 1/4 46 1/4 47 1/4 48 1/4 49 1/4 50 1/4 51 1/4 52 1/4 53 1/4 54 1/4 55 1/4 56 1/4 57 1/4 58 1/4 59 1/4 60 1/4 61 1/4 62 1/4 63 1/4 64 1/4 65 1/4 66 1/4 67 1/4 68 1/4 69 1/4 70 1/4 71 1/4 72 1/4 73 1/4 74 1/4 75 1/4 76 1/4 77 1/4 78 1/4 79 1/4 80 1/4 81 1/4 82 1/4 83 1/4 84 1/4 85 1/4 86 1/4 87 1/4 88 1/4 89 1/4 90 1/4 91 1/4 92 1/4 93 1/4 94 1/4 95 1/4 96 1/4 97 1/4 98 1/4 99 1/4 100 1/4

**Spring Hinges—**

Holdback, Cast Iron, gro. \$15.00

Non-Holdback, Cast Iron, gro. \$15.00

J. Bardaley:

Bardaley's Patent Checking.....15¢

### Lemon Squeezers—

See Squeezers, Lemon.

### Lifters, Transom—

Dickson:  
 8 x 4 ft. x 1/4".....\$ 100 \$10.00  
 Other sizes Iron.....70¢10¢10¢  
 Other sizes, Brass.....70¢10¢  
 Excelsior.....60¢60¢10¢  
 Payson's:  
 Solid Grip Nos. 303 and 304, \$ 100,  
 \$11.00  
 Other sizes.....70¢10¢

### Lines—

Wire Clothes, Nos. 19 19 20  
 75 feet.....\$2.50 \$25 \$20  
 75 feet.....\$1.50  
 Oseman Mills:  
 Crown Solid Braided Chalk.....\$3.50  
 Mason's, No. 0 to No. 3.....\$3.50  
 Silver Lake Braided Chalk, No. 0, \$6.00;  
 No. 1, \$6.50; No. 2, \$7.00; No. 3, \$7.50;  
 No. 4, \$8.00.....\$3.50

### Locks, &c.— Cabinet—

Cabinet Locks.....\$3.50  
 Door Locks, Latches, &c.—  
 [Net prices are very often made on  
 these goods.]

Reading.....60¢60¢10¢  
 R. & E. Mfg. Co.....50¢10¢60¢5¢  
 Sargent & Co.....30¢60¢10¢  
 S. B. & Co., Locks, Knobs, &c. 40¢40¢5¢

### Elevator—

Stowell's.....\$3.50

### Padlocks—

Wrought Iron, list Dec. 3, '97.....  
 75¢75¢10¢  
 Dog Collar, S. B. Co.....40¢  
 R. & E. Mfg. Co. Wrt. Steel & d. Brass 50¢  
 S. B. & Co.....40¢

### Sash, &c.—

Fitch's Patent.....65¢10¢  
 Ives' Patent.....65¢65¢10¢  
 Payson's Perfect.....70¢  
 Payson's Signal.....70¢10¢  
 Reading.....60¢10¢10¢70¢

### Machines—

#### Boring—

Without Augers.  
 Upright Angular.  
 Douglas.....\$2.50 \$3.00  
 Jennings.....2.50 3.00  
 Millers' Falls.....5.75  
 Snell's, Rice's Pat. 2.50 2.75

#### Fluting—

Crown Jewel, 6 in.....\$3.50@2.75

#### Holisting—

Moore's Anti-Friction Differential Pul-  
 ley Block.....90¢  
 Moore's Hand Hoist, with Lock Brake 90¢

#### Washing—

Wayne American, No. 2,  
 \$ dos. \$37.50  
 Western Star, No. 2, \$  
 dos. 97.50  
 Western Star, No. 3, \$  
 dos. 30.00  
 St. Louis, No. 41, \$ dos. 65.00

### Mallets—

Hickory.....50¢50¢10¢  
 Lignumvitae.....50¢50¢10¢  
 Tinnors', Hickory and Applewood,  
 dos. 55¢50¢  
 Fiber Head, Stearns'.....20¢

### Mattocks—

List Feb. 23, 1899.....70¢70¢10¢

### Meat Cutters—

See Cutters, Meat.

### Milk Cans—See Cans, Milk.

### Mills— Coffee—

Box and Side, list Jan. 1, '93.....  
 60¢10¢60¢10¢10¢  
 Net prices are often made on some  
 goods which are lower than above  
 discounts.  
 Enterprise Mfg. Co., list Jan. 17, '93, 30¢  
 National, list Jan. 1, '94.....30¢  
 Parker's Columbia and Victor.....60¢10¢  
 Parker's Upright.....30¢10¢40¢  
 Swift, Lane Bros.....33¢

### Mincing Knives—

See Knives, Mincing.

### Molasses Gates—

See Gates, Molasses.

### Money Drawers—

See Drawers, Money.

### Mowers, Lawn—

Net prices are generally quoted.  
 10 12 14 16-inch  
 Cheap.....\$1.65 \$1.70 \$1.75 \$1.80  
 Medium.....2.50 2.75 3.00 3.25  
 High Grade 3.50 3.75 4.00 4.25  
 Pennsylvania and Continental.....  
 60¢10¢10¢

### Philadelphia:

All Styles except A and E.....70¢10¢  
 Style A, all Steel.....60¢10¢  
 Style E, Low Wheel.....60¢10¢  
 Style E, High Wheel.....60¢10¢  
 Racine.....60¢10¢10¢

### Nails—

Cut and Wire. See Trade Report.  
 Wire Nails and Brads, Papered.  
 List May 1, '98.....85¢85¢5¢  
 Hungarian, Finishing, Upholsterers', &c.  
 See Tacks.

### Horse—

Nos. 6 7 8 9 10  
 A. C.....25¢ 23¢ 22¢ 21¢ 20¢  
 American.....9¢ 9¢ 9¢ 9¢ 9¢  
 Ausable.....25¢ 20¢ 25¢ 24¢ 23¢  
 Capewell.....19¢ 18¢ 17¢ 16¢ 15¢  
 C. B. K.....25¢ 23¢ 22¢ 21¢ 20¢  
 Champplain.....25¢ 20¢ 25¢ 24¢ 23¢  
 Clifton Fin.....19¢ 17¢ 16¢ 15¢ 14¢  
 Maud S.....25¢ 23¢ 22¢ 21¢ 20¢  
 Neponset.....23¢ 21¢ 20¢ 19¢ 18¢  
 Putnam.....23¢ 21¢ 20¢ 19¢ 18¢  
 Vulcan.....23¢ 21¢ 20¢ 19¢ 18¢

### Picture—

1 1/2 2 3 3 1/2 in.  
 Brass Head.....\$2.50 \$2.50 1.00 1.10 1.15 gro.  
 Por. Head.....\$5.00 \$5.00 1.10 1.15 1.15 gro.

### Nippers, See Pliers and Nippers.

### Nut Crackers—

See Crackers, Nut.

### Nuts—List Feb. 1, 1899.

List Feb. 1, '99.  
 Cold Punched. Off  
 Mfrs. or U. S. Standard, list.  
 Hexagon, plain.....\$5.00  
 Square, plain.....5.00  
 Square, C. T. & R.....5.00  
 Hexagon, C. T. & R.....5.00  
 Hot Pressed:  
 Mfrs., U. S. or Nar. Gauge Stan'd.  
 Square.....\$5.00  
 Hexagon.....6.50

### Oakum—

Best or Government.....lb. 34¢  
 Navy.....lb. 44¢  
 U. S. Navy.....lb. 54¢  
 Plumbers' Spun Navy.....34¢  
 In carload lots 1/4 lb. off f. o. b. New  
 York.

### Oil Tanks—See Tanks, Oil.

### Oilers—

Brass and Copper.....50¢10¢60¢  
 Zinc.....60¢10¢10¢70¢  
 Malleable, Hammers' Improved, No. 1,  
 \$3.00; No. 2, \$4.00; No. 3, \$4.50  
 Malleable, Hammers' Old Pattern,  
 same list.....58¢10¢  
 Wilmet & Hobbs Mfg. Co.....70¢10¢75¢

### Openers, Can—

French.....dos. 85¢  
 Iron Handle.....dos. 80¢75¢  
 National, \$ gro. \$1.75 \$2.00  
 Sardinia Scissors.....\$2.00 \$2.10  
 Sprague, Iron or Wood Handles.....  
 \$ dos. 40¢45¢  
 Stowell's.....75¢10¢

### Packing—

#### Rubber—

Standard, fair quality.....70¢10¢75¢  
 Inferior quality.....75¢10¢80¢  
 Extra.....60¢5¢60¢10¢5¢  
 Jenkins' Standard, \$ 80¢.....95¢95¢5¢

#### Miscellaneous—

American Packing.....9¢10¢10¢  
 Cotton Packing.....13¢11¢10¢  
 Italian Packing.....10¢11¢4¢  
 Jute.....5¢5¢4¢  
 Russia Packing.....12¢12¢10¢

### Pails—

#### Creamery—

S. S. & Co., with gauges. No. 1 \$5.25;  
 No. 2, \$5.50 \$ dos. 18¢

#### Galvanized—

Inch..... 10 12 14  
 Water, Standard,  
 gro. \$18.00 \$21.00 \$25.00  
 Water, Competi-  
 tion, gro. 17.00 19.50 22.00  
 Fire, gro. 22.00 25.00 28.00  
 Well, gro. 22.00 25.00 27.00

### Pans—

#### Dripping—

Large Sizes.....lb. 1/2 @ 1/4¢  
 Small Sizes.....lb. 1/4 @ 1/4¢

#### Fry—

Standard List.....80¢80¢10¢  
 Acme Fry Pans.....75¢75¢10¢

### Roasting and Baking—

Columbian, S. S. & Co., Nos. 5, \$ dos.  
 \$10; 10, \$11.50; 20, \$13; 30, \$15.....80¢  
 Simplex No. 08, \$ dos. \$7.00; No. 09,  
 \$5.50.....80¢

### Paper—

#### Building Paper—

Per roll  
 Rosin Sized Sheathing: 500 sq. ft.  
 Light wt., 20 sq. ft. to lb. \$0.25@0.40  
 Medium wt., 12 sq. ft. to lb. \$0.55@0.60  
 Heavy wt., extra quality \$0.95@1.05  
 Barrett's Water Proof Sheathing.....  
 \$1.35@1.75  
 Medium Grades Water Proof  
 Sheathing.....\$0.80@1.25  
 Deafening Felt, 2, 3 and 4 1/2 sq. ft.  
 to lb., ton.....\$12.50

#### Tarred Paper.

1 ply (roll 500 sq. ft.), ton \$35.00@37.00  
 2 ply, heavy, roll 100 sq. ft.....90¢  
 3 ply, light, roll 100 sq. ft.....75¢  
 3 ply, heavy, roll 100 sq. ft.....\$1.80  
 3 ply, light, roll 100 sq. ft.....\$1.00

#### Sand and Emery—

List April 19, 1888.....60¢10¢5¢60¢

### Parers—

#### Apple—

Advance.....\$ dos. \$4.50  
 Baldwin.....\$ dos. \$5.00  
 Bonanza.....each \$5.00  
 Dandy.....each \$7.50  
 Eureka, 1888.....each \$16.00  
 Family Day State.....\$ dos. \$12.00  
 Hudson's 1 1/2 star.....\$ dos. \$4.00  
 Hudson's Ro king Table.....\$ dos. \$5.50  
 Improved Bay State \$ dos. \$7.00@30.00  
 New Lightning.....\$ dos. \$5.50  
 Reading 72.....\$ dos. \$4.00  
 Reading 78.....\$ dos. \$7.00  
 Turn Table.....\$ dos. \$4.50  
 White Mountain.....\$ dos. \$4.00

#### Potato—

Saratoga.....\$ dos. \$5.50  
 White Mountain.....\$ dos. \$4.50

### Paris Green—

Arsenic, kegs or casks, lb. 12 @ 12 1/2¢  
 Kegs of 100 to 175  
 pounds.....lb. 12 1/4@13 c  
 Kits of 14, 25 and 50  
 pounds.....lb. 12 1/4@14 c  
 Paper boxes 2 to 5 pnds. lb. 13 1/4 @ 14 c  
 Paper boxes 1 pound.....lb. 14 @ 14 1/2¢  
 Paper boxes 1/2 pound.....lb. 15 @ 15 1/2¢  
 Paper boxes 1/4 pound.....lb. 16 @ 16 1/2¢  
 Note.—These prices are sometimes  
 shaded by jobbers.

### Picks and Mattocks—

List Feb. 23, 1899.....70¢70¢10¢

### Pinking Irons—

See Irons, Pinking.

### Pins—

#### Escutcheon—

Brass.....60¢60¢5¢  
 Iron, list Nov. 11, '83.....60¢60¢5¢

### Pipe, Cast Iron Soil—

Factory Shipments.

Standard, 2-6 in.....70¢  
 Extra Heavy, 2-6 in.....70¢5¢  
 Fittings.....75¢

### Pipe, Wrought—

Factory Shipments.

List February, 1899.  
 Plain and Galvanized:  
 Carload lots.....60¢10¢10¢5¢  
 Less than carload lots.....60¢10¢10¢  
 Note.—Where prompt shipments can be  
 made higher prices are often paid.  
 Screw and Socket Casing.....45¢5¢  
 Inserted Joint Casing.....40¢5¢  
 Cold Drawn Seamless Steel Tubing.....  
 60¢

### Planes and Plane Irons—

#### Wood Planes—

Molding.....45¢15¢5¢  
 Bench, First quality.....50¢5¢50¢10¢  
 Bench, Second quality.....50¢10¢5¢60¢  
 Bailey's (Stanley R. & L. Co.)  
 50¢10¢10¢50¢10¢10¢10¢  
 Gage Self Setting.....35¢

#### Iron Planes—

Bailey's (Stanley R. & L. Co.)  
 50¢10¢10¢50¢10¢10¢10¢  
 Chaplin's Iron Planes.....50¢10¢  
 Miscellaneous Planes (Stanley R. & L.  
 Co.).....25¢10¢10¢5¢10¢10¢10¢  
 Sargent's.....80¢10¢10¢70¢

#### Plane Irons—

Standard List.....50¢10¢30¢10¢10¢  
 Buck Bros.....30¢  
 Butcher's.....\$5.00@5.25 to 2  
 Stanley R. & L. Co.....50¢10¢50¢10¢10¢  
 L. & J. White.....20¢5¢25¢

### Plates—

Felloc.....lb 3/4 @ 3/4¢  
 Self-Sealing Pie Plates (S. S. & Co.), \$  
 dos. \$2.00.....50¢

### Pliers and Nippers—

Gas..... 7 8 9 10-in.  
 Best.....\$5.25 \$6.00 \$6.50 dos.  
 Good.....\$2.50 2.75 3.00 3.50 dos.  
 Acme Nippers.....30¢

### Bernard's:

Parallel Pliers, &c.....39¢1¢  
 Paragon Pliers.....60¢  
 Lodi Pliers.....60¢  
 Elm City Fence Pliers.....35¢  
 Button's.....70¢10¢10¢35¢  
 Heller's Farmers' Pincers and Tools.....  
 40¢40¢5¢  
 Morrill's Parallel, \$ dos. \$12.00.....30¢5¢  
 P. & W. Cast Steel.....50¢50¢5¢  
 P. & W. Tinnors' Cutting Nippers,  
 add 6¢.....10¢  
 Utica Drop Forge & Tool Co.:  
 Combination Pliers.....40¢5¢  
 Side Cutting Pliers.....40¢5¢  
 Hall Patent Nipper.....40¢5¢  
 Round and Flat Nose Pliers.....40¢5¢  
 End Cutting Pliers.....40¢5¢  
 Royal Blue.....40¢5¢  
 Glass Pliers.....40¢5¢  
 Burner Pliers.....40¢5¢

### Plumbs and Levels—

Plumbs and Levels.....70¢10¢10¢75¢10¢10¢  
 Diast'n's.....70¢  
 Pocket Levels.....73¢10¢10¢75¢10¢  
 Stanley R. & L. Co.....70¢10¢10¢75¢10¢10¢  
 Stanley's Duplex.....25¢10¢25¢10¢10¢  
 Woods' Extension.....33¢2¢

### Poachers, Egg—

Buffalo Steam Egg Poachers, \$ dos.  
 No. 1, \$4.00; No. 2, \$9.00; No. 3, \$9.00;  
 No. 4, \$12.00.....50¢

### Points, Glaziers'—

Bulk and 1 lb. papers.....lb. 10¢@11 1/2¢  
 1/2 lb. papers.....lb. 11 @ 12 c  
 1/4 lb. papers.....lb. 11 1/2@12 1/2¢

### Pokes, Animal—

Ft. Madison Hawk's.....\$ dos. \$3.00  
 Ft. Madison, Western.....\$ dos. \$3.50  
 Metallic Horse Poke.....\$ dos. \$5.00

### Police Goods—

Manufacturers' Lists.....25¢@25¢10¢  
 Tower's.....25¢

### Polish—Metal—

Prestoline Liquid, No. 1 (1 pt.), \$ dos.  
 \$3.00; No. 2 (1 qt.), \$0.75.....40¢  
 Prestoline Paste.....30¢@40¢  
 U. S. Metal Polish Paste, 8 oz. boxes, \$  
 dos. 50¢; 1/2 gr. \$4.50; 1/4 boxes, \$  
 dos. \$1.25; 1/8 boxes, \$ dos. \$3.25.  
 U. S. Liquid, 8 oz. cans, \$ dos. \$1.25;  
 \$ gr. \$12.00.  
 Barkeepers' Friend Metal Polish, \$ dos.  
 \$1.75; 1/2 gr. \$15.00.  
 Wynn's White Silk, 1/2 pt. cans, \$ dos. \$1.50

### Stove—

Joseph Dixon's, \$ gr. \$5.75.....10¢  
 Dixon's Plumbago.....\$ gr. \$3.50  
 Fireside.....\$ gr. \$3.50  
 Gem, \$ gr. \$4.50.....10¢  
 Japanese.....\$ gr. \$3.50  
 Jet Black.....\$ gr. \$3.50  
 Wynn's Black Silk, 5 lb. pail.....\$ 1.25  
 Wynn's Black Silk, 1/2 box, \$ dos. \$1.00  
 Wynn's Black Silk, 8 oz. box, \$ dos. \$0.75  
 Wynn's Black Silk, 8 oz. liq., \$ dos. \$1.00

### Poppers, Corn—

Round or Square:  
 1 qt.....gro. \$2.00  
 1 1/2 qt.....gro. 8.00  
 2 qt.....gro. 10.00  
 Quincy Corn Popper, 1 qt., \$ gr.  
 \$17.00; 2 qt., \$22.00.

### Post Hole and Tree Augers and Diggers—

See also Diggers, Post Hole, &c.

### Potato Parers—

See Parers, Potato.

### Pots—

#### Glue—

Enameled.....40¢10¢5¢60¢  
 Tinned.....40¢5¢40¢10¢

### Powder—

In Canisters:  
 Duck, 1 lb. each.....45¢  
 Fine Sporting, 1 lb. each.....75¢  
 Rifle, 1/2 lb. each.....15¢  
 Rifle, 1 lb. each.....25¢  
 In Kegs:  
 Duck, 6 1/4 lb. kegs.....\$2.25  
 Duck, 12 1/2 lb. kegs.....\$4.25  
 Duck, 25 lb. kegs.....\$6.00  
 Rifle, 6 1/4 lb. kegs.....\$1.25  
 Rifle, 12 1/2 lb. kegs.....\$2.25  
 Rifle, 25 lb. kegs.....\$4.00

King's Smokeless:  
 Keg (25 lb bulk).....\$30.00  
 Half Keg (12 1/2 lb bulk).....\$10.25  
 Quarter Keg (6 1/4 lb bulk).....\$5.25  
 Canister (1 lb bulk).....\$0.90  
 Case, 1 lb Canisters (50 lb  
 bulk).....\$45.00  
 Half Case, 1 lb Canisters (25  
 lb bulk).....\$22.75  
 King's Semi-Smokeless:  
 Keg (25 lb bulk).....\$10.00  
 Half Keg (12 1/2 lb bulk).....\$5.25  
 Quarter Keg (6 1/4 lb bulk).....\$2.75  
 One Pound Can, bulk.....\$0.50

### Presses—

#### Fruit and Jelly—

Enterprise Mfg. Co.....\$5@30¢

### Pruning Hooks and Shears—See Shears.

### Pullers, Nail—

Crown, \$ dos. \$18.00.....50¢  
 Crown Prince, \$ dos. \$15.00.....50¢  
 Giant, No. 1, \$ dos. \$18; No. 2, \$16.50;  
 No. 3, \$15.....40¢  
 National, \$ dos. \$24.00.....40¢  
 Pelican, \$ dos. \$9.00.....15¢10¢  
 Scranton No. 1 and 2, \$ dos. \$10.00  
 Scranton, No. 3, \$ dos. \$9.50





**Shovels and Tongs—**

Brass Head ..... 60¢10@60¢10¢10¢  
 Iron Head ..... 80¢10@60¢10¢10¢

**Sieves and Sifters—**

Hunter's Imitation, gro. \$9.00@9.50  
 Buffalo Metallic, S. S. & Co., gr.:  
 16 16x18 18 18x20  
 Blued ..... \$10.80 \$11.40 \$11.40 \$12.00  
 Tinned ..... 11.40 12.00 12.00 12.60  
 Eclipse ..... gr. \$9.00@9.50  
 Hunter's Genuine ..... gr. \$10.00@10.50  
 Shaker (Barber's Pat.) Flour Sifters:  
 \* doz. \$3.00

**Sieves, Wooden Rim—**

Mesh 18, Nested, doz. .... \$0.80  
 Mesh 20, Nested, doz. .... .90  
 Mesh 24, Nested, doz. .... 1.00

**Sinks—****Cast Iron—**

High list ..... 75¢5@75¢10¢  
 Low list ..... 60¢10¢10¢10¢

**Wrought Steel—**

Columbus Galv'd and Enamelled, 50¢10¢  
 Columbus, Painted, 50¢10¢  
 L. & G. .... 50¢10¢

**Slates—**

"D" Slates ..... 50¢10¢50¢10¢10¢  
 Unexcelled Noiseless Slates .....  
 60¢6 tens@60¢6 tens¢5¢  
 Wire Bound ..... 40¢10¢50¢  
 Double Slates, add \$1 case, net.

**Slaw Cutters—See Cutters.****Snaps, Harness—**

German ..... 50¢50¢5¢  
 Covert Mfg. Co.:  
 Derby ..... 45¢2¢  
 High Grade ..... 45¢2¢  
 Jockey ..... 45¢2¢  
 Trojan ..... 45¢2¢

Covert's Saddlery Works:  
 Banner ..... 75¢  
 Crown ..... 70¢  
 Triumph ..... 70¢

W. & E. T. Fitch:  
 Bristol ..... 40¢10¢  
 Empire ..... 50¢5¢  
 National ..... 50¢5¢  
 Clipper ..... 50¢10¢5¢  
 Champion ..... 40¢10¢  
 Victor ..... 60¢5¢  
 O'Leary's ..... 65¢5¢10¢  
 Solid Steel ..... 65¢5¢10¢  
 Sargent's Patent Guarded .....  
 70¢10¢70¢10¢10¢

**Snaths—**

Scythe ..... 55¢

**Snips, Tinnings—See Shears.****Soldering Irons—**

See Irons, Soldering.

**Spoke Trimmers—**

See Trimmers, Spoke.

**Spoons and Forks—****Tinned Iron—**

Basting, Cen. Stamp Co.'s list .....  
 75¢10¢80¢  
 Solid Table and Tea, Cen. Stamp  
 Co.'s list ..... 70¢25¢

**Silver Plated—**

Flat Ware ..... 50¢10¢60¢10¢  
 Wm. Rogers Mfg. Co. .... 50¢10¢

**Miscellaneous—**

German Silver ..... 60¢10¢  
 Wm. Rogers Mfg. Co.:  
 18 German Silver ..... 60¢  
 Rogers' Silver Metal ..... 50¢10¢

**Springs—****Door—**

Gem (Coll.) ..... 20¢  
 Rubber, complete, gr. \$15.00  
 Star (Coll.) ..... 30¢  
 Torrey's Rod, 39 in. gr. \$1.10@1.25  
 Warner's No. 1, gr. \$1.50; No. 2,  
 \$3.40 ..... 55¢55¢10¢  
 Victor (Coll.) ..... 60¢10¢60¢10¢5¢

**Carriage, Wagon, &c.**

Elliptic, Concord, Platform and Half  
 Scroll, 60¢10¢60¢10¢5¢ or follow-  
 ing net prices:  
 1½ in. and wider ..... Blk. Hf Brt. Brt.  
 Tested and Temp. 5¢ 6¢4¢ 5¢4¢  
 Oil Tested and  
 Tempered ..... 6¢ 6¢4¢ 6¢4¢  
 Cliff's Bolster Springs ..... 40¢2¢  
 Cliff's Seat Springs ..... pair 45¢

**Sprinklers, Lawn—**

Enterprise ..... 25¢30¢  
 Philadelphia No. 1, gr. \$1; No. 2,  
 \$1.5; No. 3, \$3.4 ..... 35¢

**Squares—**

Nickel plated, List May 1, '99.  
 Steel and Iron, 75¢75¢10¢  
 Rosewood Hd. Try Square and T-  
 Bevel ..... 60¢10¢10¢70¢  
 Iron Hd. Try Squares and T-Bevels,  
 40¢10¢40¢10¢10¢  
 Diston's Try Sq. and T-Bevels ..... 60¢10¢  
 Winterbottom's Try and Miter ..... 50¢10¢

**Squeezers—****Lemon—**

Wood, Common, gro. No. 0, \$5.00;  
 No. 1, \$6.50; No. 2, \$10.00.  
 Wood, Porcelain Lined:  
 Cheap ..... doz. \$2.60@2.75  
 Good Grade ..... doz. \$3.00@3.50  
 Tinned Iron ..... doz. \$0.80@1.25  
 Iron, Porcelain Lined doz. \$3.25@3.50  
 Jennings' Star ..... gr. doz. \$1.85@1.90  
 King ..... gr. doz. \$2.00

**Staples—**

Barbed Blind ..... lb. 8¢3¢  
 Electricians', Association list, 30¢10¢  
 Fence Staples, same price as Barbed  
 Wire. See Trade Report.  
 Poultry Netting ..... lb. 4¢4¢  
 Grand Crossing Tack Co.'s list, 75¢10¢

**Steels, Butchers'—**

Dick's ..... 40¢  
 Foster Bros' ..... 40¢  
 C. & A. Hoffmann's ..... 40¢  
 Nichols Bros' ..... 50¢  
 John Wilson's, list Sept. 1, '94 ..... 25¢

**Steelyards—**

60¢40¢10¢

**Stocks and Dies—**

Blacksmiths' ..... 35¢40¢  
 Gardner ..... 40¢10¢  
 Green River ..... 25¢  
 Lightning Screw Plate ..... 25¢  
 Little Giant ..... 25¢  
 Reece's New Screw Plates ..... 25¢30¢  
 Reversible Hatchet ..... 25¢

**Stone—****Soythe Stones—**

Pike Mfg. Co., list '95-'96 ..... 33¢4¢  
 Cleveland Stone Co., list Nov., '94 ..... 33¢4¢

**Oil Stones, &c.**

Pike Mfg. Co.:  
 Hindostan No. 1, gr. \$1.00 ..... 33¢4¢  
 Sand Stone ..... 33¢4¢  
 Turkey Oil Stone, Extra ..... 33¢4¢  
 5 to 3 in. ..... 80¢  
 Turkey Slips ..... \$9.00  
 Lily White Washita ..... 60¢  
 Rosy Red Washita ..... 60¢  
 Washita Stone, Extra ..... 50¢  
 Washita Stone, No. 2 ..... 40¢  
 Lily White Slips ..... 30¢  
 Rosy Red Slips ..... 30¢  
 Washita Slips, Extra ..... 30¢  
 Washita Slips, No. 1 ..... 70¢  
 Arkansas Stone, No. 1, 3 to 5 in. \$2.35  
 Arkansas Stone, No. 1, 5 to 8 in. \$3.50  
 Tanite Mills:  
 Emery Oil, gr. doz. \$5.00 ..... 50¢60¢

**Stoners—****Cherry—**

Enterprise ..... 25¢30¢

**Stops, Bench—**

Millers Falls ..... 15¢10¢  
 Morrill's, gr. doz. No. 1, \$10.00; No. 2,  
 \$11.00, 40¢20¢  
 Stearns' ..... 30¢5¢

**Stops, Window—**

Taplin's ..... 45¢

**Stove Boards—**

See Boards, Stove.

**Stove Polish—See Polish, Stove.****Straps, Box—**

Cary's Universal ..... 30¢10¢10¢

**Stretchers, Carpet—**

Cast Iron, Steel Points ..... doz. 70¢75¢  
 Cast Steel, Polished ..... doz. \$2.25  
 Socket ..... doz. \$1.75

**Stuffers, Sausage—**

Miles' Challenge, gr. doz. \$20 ..... 50¢50¢5¢  
 Enterprise Mfg. Co., list Jan. 17 '93 ..... 25¢25¢7¢5¢  
 National Specialty Mfg. Co., list Jan.  
 1, '97 ..... 25¢

**Tacks, Brads, &c.—**

List Jan. 15, '99.  
 Carpet Tacks:  
 American Blued ..... 90¢30¢90¢35¢  
 American Tinned ..... 90¢30¢90¢35¢  
 American Cut Tacks ..... 90¢20¢90¢25¢  
 Sneed's Iron Tacks ..... 90¢25¢90¢30¢  
 Upholsterers' Tacks ..... 90¢10¢10¢90¢50¢  
 Lamp Tacks ..... 90¢10¢10¢90¢50¢  
 Lace Tacks ..... 85¢20¢90¢  
 Trimmers' Tacks ..... 90¢20¢90¢30¢  
 Looking Glass Tacks ..... 75¢  
 Bill Posters' and Railroad Tacks .....  
 90¢25¢90¢35¢  
 Hungarian Nails ..... 80¢10¢15¢  
 Common and Patent Brads, 75¢75¢5¢  
 Trunk and Clout Nails:  
 Blued ..... 80¢10¢  
 Tinned ..... 80¢10¢  
 Miscellaneous—  
 Double Point Tacks ..... 90¢5¢  
 Steel Wire Brads, R. & E. Mfg.  
 Co.'s list ..... 50¢10¢60¢  
 See also Nails, Wire.

**Tanks, Oil—**

Emerald, S. S. & Co. .... 30-gal. \$3.00  
 Emerald, S. S. & Co. .... 60-gal. \$3.75

Queen City S. S. & Co., 80-gal. each, \$4.00;  
 100-gal. \$6.25; 120-gal. \$8.50; 200-  
 gal. \$14.00; 250-gal. .... \$17.75

**Tapes, Measuring—**

American Ases' Skin ..... 40¢10¢50¢  
 Patent Leather ..... 25¢25¢10¢  
 Steel ..... 35¢40¢  
 Chesterman's ..... 25¢25¢5¢  
 Keuffel & Esser Co. Steel and Metallic,  
 new list, 1898 ..... 35¢  
 Lufkin's Steel and Metallic ..... 33¢4¢33¢4¢5¢

**Thermometers—**

Tin Case ..... 30¢10¢

**Ties, Bale—Steel.**

Standard Wire ..... 60¢10¢5¢

**Ties, Wall—**

Cleveland, Steel ..... 1000, \$10.00

**Tinners' Shears, &c.—**

See Shears, Tinners', &c.

**Tinware—**

Stamped, Japanned and Pieced, sold  
 very generally at net prices.

**Tire Benders, Upsetters,**

&c.—See Benders and Upset-

**Tobacco Cutters—**

See Cutters, Tobacco.

**Tools—**

Coopers' ..... 20¢20¢5¢

**Saw—**

Atkins' new list ..... 40¢  
 Simonds' ..... 33¢4¢

**Transom Lifters—**

See Lifters, Transom.

**Traps—Game—**

Newhouse ..... 50¢5¢50¢10¢  
 Oneida Pattern ..... 80¢30¢5¢

**Mouse and Rat—**

Mouse, Wood, Choker, doz. holes, 3@9¢  
 Mouse, Round or Square Wire .....  
 doz. \$0.35@1.00

Dandy ..... gr. doz. \$1.75

Marty French Rat and Mouse Traps  
 (Genuine):

No. 1, Rat ..... gr. doz. \$15.00  
 No. 3, Rat ..... gr. doz. \$5.85  
 No. 3½, Rat ..... gr. doz. \$4.50  
 No. 4, Mouse ..... gr. doz. \$4.30  
 No. 5, Mouse ..... gr. doz. \$3.00  
 Schuyler's Rat Killer, No. 1, gr. \$13.50;  
 No. 2, gr. \$15.00  
 Out o' Sight, Mouse, No. 1, gr. 60¢;  
 Rat, No. 2, \$1.25; No. 3, \$2.00;  
 Gopher, \$1.50; Stop Thief, No. 1,  
 \$1.25; No. 2, \$1.50.

**Fly—**

Balloon, Globe or Acme .....  
 doz. \$1.25; gr. \$1.50@1.50

Harper, Champion or Paragon  
 doz. \$1.50; gr. \$1.70

**Trimmers, Spoke—**

Bonney's No. 1, gr. doz. \$2.75; No. 2,  
 \$3.75

Douglas', gr. doz. \$0.00 ..... 20¢  
 Stearns' ..... 20¢10¢

**Trowels—**

Deaton Brick and Pointing ..... 30¢  
 Diston's Standard Brand ..... 25¢  
 Deaton's ..... 40¢  
 Peace's Plastering ..... 25¢25¢5¢  
 Rose Brick and Plastering ..... 3¢40¢10¢  
 Woodrough & McParlin, Plastering, 25¢10¢

**Trucks, Warehouse, &c.—**

R. & L. Block Co.'s list ..... 40¢  
 Daisy Stove Trucks, improved pattern  
 gr. doz. \$18.00

**Tubs, Wash—**

Galvanized, gr. doz. \$5.25 6 07 6.75  
 Galvanized S. S. & Co., with Wringer  
 Attachment, gr. doz. No. 10, \$6.25;  
 No. 20, \$6.75; No. 30 ..... \$7.50

**Twine—**

White Sisal, 500 feet to lb. .... 6¢  
 Standard, 500 feet to lb. .... 6¢  
 Manila, 500 feet to lb. .... 10¢  
 Pure Manila, 500 feet to lb. .... 10¢

**Miscellaneous—**

Flax Twine— BC B.  
 No. 9, 14 and 1½-lb. Balls ..... 24¢  
 No. 12, 14 and 1½-lb. Balls ..... 17¢  
 No. 18, 14 and 1½-lb. Balls ..... 17¢  
 No. 24, 14 and 1½-lb. Balls ..... 17¢  
 No. 36, 14 and 1½-lb. Balls ..... 16¢  
 Chalk Line, Cotton, ½-lb. Balls .....  
 19¢30¢

Cotton Mops, 6, 9, 12 and 15 lb. to  
 doz ..... 50¢9¢

Cotton Wrapping, 5 Balls to lb .....  
 9¢10¢

American 2-Ply Hemp, 14 and 1½-lb.  
 Balls ..... 9¢10¢

American 2-Ply Hemp, 1-lb. Balls .....  
 9¢10¢

American 2-Ply Hemp, 1-lb. Balls  
 (Spring Twine) ..... 10¢11¢

India 2-Ply Hemp, 14 and 1½-lb.  
 Balls (Spring Twine) ..... 9¢  
 India 2-Ply Hemp, 1-lb. Balls ..... 8¢  
 India 2-Ply Hemp, 1½-lb. Balls ..... 8¢

2, 3, 4 and 5-Ply Jute, 14-lb. Balls, 6¢  
 Mason Line, Linen, 14-lb. Balls, 6¢  
 No. 26 Mattress, 14 and 1½-lb. Balls, 5¢  
 Wool ..... 6¢5¢

**Vises—**

Solid Box ..... 60¢60¢10¢

Bonney's Saw Vises ..... 40¢10¢

**Parallel—**

Bonney's ..... 40¢10¢  
 Fisher & Norris Double Screw ..... 15¢10¢  
 Hollands' ..... 40¢40¢10¢  
 Massey's Clincher ..... 40¢40¢10¢  
 Merrill's ..... 25¢  
 Miller's Falls ..... 45¢10¢  
 Parker's ..... 20¢25¢  
 Parker's Oval Slide ..... 50¢10¢  
 Parker's Victor ..... 30¢  
 Prentiss ..... 20¢25¢  
 Sargent's ..... 70¢10¢70¢10¢10¢  
 Simpson's Adjustable ..... 40¢  
 Stephens' ..... 25¢30¢  
 Toles' Woodworking ..... 25¢  
 Trenton ..... 40¢5¢40¢10¢

**Saw Filers—**

Bonney's, Nos. 2 & 3, \$15.00. .... 40¢10¢  
 Dis. Co.'s D S Clamp and Guide, gr. \$3.00 ..... 25¢  
 Reading ..... 40¢10¢  
 Stearns' Common, Nos. 0, 1, 2 & 3 ..... 50¢  
 Stearns' Rubber Jaw, Nos. 10 & 35, 35¢  
 Wentworth's Rubber Jaw, Nos. 1, 2  
 and 3 ..... 40¢

**Miscellaneous—**

Signal & Keeler Combination Pipe  
 Vise ..... 80¢5¢

Parker's Combination Pipe:  
 87 Series ..... 60¢  
 187 Series ..... 60¢5¢  
 No. 870 ..... 40¢

**Wads—Price Per M.**

B. E., 11 up ..... 60¢  
 B. E., 9 and 10 ..... 70¢  
 B. E., 8 ..... 80¢  
 B. E., 7 ..... 80¢  
 P. E., 11 up ..... \$1.00  
 P. E., 9 and 10 ..... 1.25  
 P. E., 8 ..... 1.50  
 P. E., 7 ..... 1.50  
 Ely's B. E., 11 and larger ..... \$1.70@1.75  
 Ely's P. E., 12 to 20 ..... \$3.00@3.45

**Wagon Boxes—**

See Boxes, Wagon.

**Wagon Jacks—**

See Jacks, Wagon.

**Ware, Hollow—**

Aluminum—  
 S. S. & Co. Reduced List ..... 40¢

**Cast Iron, Hollow—**

Stove Hollow Ware:  
 Ground ..... 60¢10¢65¢  
 Unground ..... 60¢10¢10¢70¢

White Enamelled Ware:  
 Maltin Kettles ..... 75¢10¢5¢20¢  
 Boilers and Saucepans ..... 60¢60¢5¢  
 Tinned Boilers and Saucepans, 60¢5¢  
 See also Pots, Glue.

Note.—See Trade Report.

**Enamelled—**

Agate and Granite Ware, list Jan. 1,  
 '94, revised Jan. 2, '95 ..... 40¢10¢  
 Second Quality ..... 70¢10¢70¢10¢10¢  
 Ironed Enamelled Ware, Old list, '70  
 Never Break Enamelled ..... 50¢10¢

**Tea Kettles—**

Galvanized Tea Kettles:  
 Inch ..... 6 7 8 9  
 Each ..... 10¢ 15¢ 20¢ 30¢

**Steel Hollow Ware.**

Avery Spiders & Griddles ..... 70¢70¢5¢  
 Avery Kettles ..... 60¢81¢10¢  
 Never Break Spiders and Griddles .....  
 70¢70¢5¢

Never Break Kettles ..... 60¢60¢10¢  
 Solid Steel Spiders & Griddles, 70¢70¢5¢  
 Solid Steel Kettles ..... 60¢60¢10¢  
 Solid Steel Ware, Enamelled ..... 50¢10¢

**Silver Plated Hollow—**

William Rogers Mfg. Co. .... 40¢10¢5¢

**Washboards—**

Solid Zinc: ..... gr. doz.

Crescent, family size, bent frame, \$2.75  
 Red Star, laundry size, stationary  
 protector ..... \$4.00

Doubt's Zinc Surface:  
 Diamond, family size, stationary  
 protector ..... \$2.75

Saginaw Globe, family size, station-  
 ary protector ..... \$2.50

Wilson, family size, bent frame, \$2.50

Single Zinc Surface:  
 Nalad, protector, family size, open  
 back perforated ..... \$3.15

Diamond, protector, family size,



**Washers—**  
**Leather, Axle—**

solid.....80¢10¢10¢85¢  
Patent.....85¢85¢85¢  
Cot.: 1/4 1 1 1/2 1 3/4 Inch.  
Cot.: 130 140 150 170 per 100

**Iron or Steel—**

Size bolt... 5-16 3/8 1/2 5/8 3/4  
Washers... \$5.10 4.20 2.90 2.70 2.50  
In lots less than one keg add 1/4¢ per  
lb., 5-lb. boxes add 1/2¢ to list.

**Washer Cutters—**

See Cutters, Washer.

**Washing Machines—**

See Machines, W. Ring.

**Water Coolers—**

See Coolers, Water.

**Weaners—**

Wier's New Hairer—No. 1 W. doz. \$3.45;  
No. 2, \$3.70; No. 3, \$4.00; No. 4, \$4.30  
Wier's Saws—Nos. 1 and 2, W. doz. \$ .70;  
No. 3, \$2.00; No. 4, \$2.30.

**Weather Strips—See Strips,****Wedges—**

Oil Finish.....lb. 2.70@2.85¢

Aze Finish.....lb. 3.00@3.10¢

**Weights, Sash**

Eastern: Carloads at factory, \$17.00

Less than carloads at factory, \$18.00

Western: Carloads at factory, \$17.50@18.00

Less than carloads at factory, \$18.50@19.00

Note.—Some Foundries are naming higher prices.

**Well Buckets, Galvanized**

See Pails, Galvanized.

**Wheels, Well—**

8-in., \$1.75; 10-in., \$2.00; 12-in., \$2.50;

14-in., \$3.75.

**Wire and Wire Goods—**

Market: Nos. 0 to 18:

Br. &amp; Ann.....

Cop'd.....

Galv.....

Tin'd, Tin'd list.....

Stone, Br. and Ann'd.....

Nos. 16 to 18.....

Nos. 19 to 20.....

Nos. 21 to 30.....

Annealed Wire on Spools.....

Brass, list Feb. 26, '99.....

Quotations

nominal.

Copper, list Feb. 26, '99.....80¢

Cast Steel Wire.....60¢

Stubs' Steel Wire.....\$5.00 to 2, 10¢

Wire Clothes Line, see Lines.

Wire Picture Cord, see Cord.

**Bright Wire Goods—**

Iron and Brass, list April 1, 1899.....

Note.—The old high list is still used

by many merchants, dis. 90@90¢.

**Wire Cloth and Netting—**

Galvanized Wire Netting.....80@80¢15¢

Painted Screen Cloth per 100 ft.....

\$1.25@2.00

See Trade Report

**Wire Rope—See Trade Report,**

Wire, Rope—See Rope, Wire.

**Wrenches—**

Agricultural.....75¢10@80¢

Baxter's S.....70¢

Coes' Genuine.....40¢10¢5¢5¢3¢

Coes' "Mechanics".....40¢10¢5¢5¢3¢

Acme.....60¢60¢5¢

Alken's 1 foot (Bright).....\$2.00@3.20

Alligator.....70¢70¢10¢

**Bemis & Call's:**

Adjustable S.....35¢5¢1

Adjustable Pipe.....40¢

Briggs' Pattern.....30¢10¢

Combination Black.....40¢10¢

Combination Bright.....40¢5¢

Cylinder or Gas Pipe.....45¢

Extra Heavy.....50¢

Merrick's Pattern.....50¢

No. 3 Pipe, Bright.....50¢

Boardman's.....33¢

Bull Dog, W. &amp; B.....70¢70¢10¢

Donohue's Engineer.....40¢10¢

Eagle.....50¢10¢

Hercules.....70¢10¢75¢

Stevenson.....60¢10¢10¢

**Wrought Goods—**

Staples, Hooks, &amp;c., list March 17,

'98.....85¢10@90¢

**Yokes, Neck—**

Covert Saddlery Works, Trimmings.....70¢

Covert Saddlery Works, Neck Yokes

Centers.....70¢

**Yokes, Ox, and Ox Bows—**

Fort Madison's Farmers &amp; Freighters.....

Zinc—

Sheet.....lb 84¢@85¢

**PAINTS, OILS AND COLORS.—Wholesale Prices.****White Lead, Zinc, &c.**

Lead, Foreign white, in Oil.....8 @ 84¢

Lead, American White, in Oil:

Lots of 500 lb. or over.....54¢ 54¢

Lots less than 500 lb.....54¢

Lead, White, in oil, 25 lb tin

pails, add to keg price.....@ 1/4

Lead, White, in oil, 12 1/2 lb tin

pails, add to keg price.....@ 1

Lead, White, in oil, 1 to 5 lb as-

sorted tins, add to keg price.....@ 1/4

Lead, White, Dry in bbls.....@ 5

Lead, American, Terms: On lots of 500

lbs. and over, 60 days, or 2% for cash if

paid in 15 days from date of invoice.

Zinc, American, dry.....@ 34¢ 44¢

Zinc, French S. &amp; B. Red Seal.....@ 74¢

Zinc, French S. &amp; B. Green Seal.....@ 74¢

Zinc, Paris, Red Seal.....@ 84¢

Zinc, Paris, Green Seal.....@ 94¢

Zinc, Antwerp, Red Seal.....@ 74¢

Zinc, Antwerp, Green Seal.....@ 84¢

Zinc, V.M. in Poppy Oil, G. Seal

lots of 1 ton and over.....@ 104¢

lots less than 1 ton.....@ 104¢

Zinc, V.M. in Poppy Oil, Red Seal,

lots of 1 ton and over.....@ 94¢

lots less than 1 ton.....@ 94¢

Accounts.—V. M. French Zinc.—Dis-

counts to buyers of 10 bbl. lots of one or

assorted grades, 15; 25 bbls., 34; 50 bbls.,

40. No discount allowed on less than 10

bbl. lots.

**Dry Colors.**

Black, Carbon.....@ 5 @ 40

Black, Drop, Amer.....@ 5 @ 5

Black, Drop, Eng.....@ 5 @ 10

Black, Ivory.....@ 10 @ 20

Blue, Celestial.....@ 7 @ 8

Blue, Chinese.....@ 30 @ 35

Blue, Prussian.....@ 28 @ 32

Blue, Ultramarine.....@ 6 @ 30

Brown, Spanish.....@ 14 @ 1

Brown, Vandyke, Amer.....@ 14 @ 24

Brown, Vandyke, Foreign.....@ 14 @ 24

Carmine, No. 40, in bulk.....\$2.20@2.35

Carmine, No. 40, in bottles, 2.35@

Carmine, No. 40, in ounce bot. 3.50@3.80

Green, Chrome, ordinary.....@ 8 @ 10

Green, Chrome, pure.....18 @ 24

Lead, Red, bbls. and 1/2 bbls.....@ 54¢

Lead, Red, bbls. and 1/2 bbls.....@ 54¢

Litharge, bbls. and 1/2 bbls.....@ 54¢

Litharge, kegs.....@ 6

Ocher, French Washed.....@ 1 @ 14

Ocher, German Washed.....@ 4 @ 5

Ocher, American.....@ 10 @ 17.00

Orange Mineral, English.....@ 84¢ 94¢

Orange Mineral, French.....@ 10¢

Orange Mineral, German.....@ 84¢ 94¢

Orange Mineral, American.....@ 74¢

Red, Indian, English.....@ 4 @ 8

Red, Indian, American.....@ 2 @ 3

Red, Turkey.....@ 4 @ 8

Red, Tuscan.....@ 7 @ 14

Red, Venetian, Amer.....@ 100 @ 20

Red, Venetian, English.....@ 1.05@2.00

Sienna, Italian, Burnt and

Powdered.....@ 4 @ 94¢

Sienna, Ital., Raw, Powd.....@ 7

Sienna, American, Raw.....@ 14 @ 14¢

Powdered.....@ 14 @ 14¢

Talc, French.....@ 100 @ 90 @ 1.50

Talc, American.....@ 40 @ 65

Terra Alba, French, @ 100 lb.....@ 90 @ 1.00

Terra Alba, English.....@ 75 @ 80

Terra Alba, American No. 1.....@ 75

Terra Alba, American No. 2.....@ 45 @ 50

Umber, Turkey, Bnt. &amp; Powd.....@ 24 @ 3

Umber, Turkey, Raw &amp; Powd.....@ 24 @ 3

Umber, Bnt. Amer.....@ 14 @ 14

Umber, Raw, Amer.....@ 14 @ 14

Yellow, Chrome.....@ 10 @ 25

Vermilion, American Lead.....@ 10

Vermilion, Quicksilver, bbls.

or kegs.....@ 61

Vermilion, Quicksilver, bags.....@ 62

Vermilion, Quicksilver, sm'r pkgs.....@ 67

Vermilion, English, Import.....@ 70

Vermilion, Artificial.....@ 5 @ 30

Vermilion Chinese.....@ 70 @ 75

**Colors in Oil.**

Black, Lampblack, Best.....10 @ 13

Black, Lampblack, Common.....7 @ 9

Blue, Chinese.....35 @ 40

Blue, Prussian.....35 @ 45

Blue, Ultramarine.....15 @ 20

Brown, Vandyke.....7 @ 12

Green, Chrome.....7 @ 11

Green, Paris.....7 @ 22

Sienna, Raw.....7 @ 10

Sienna, Burnt.....7 @ 10

Umber, Raw.....6 @ 10

Umber, Burnt.....7 @ 10

**Miscellaneous.**

Barytes, Foreign, @ ton.....\$18.00@20.00

Barytes, Amer. floated.....18.00@20.00

Barytes, Crude.....8.00@10.00

Chalk, in bulk.....@ 2.00 @ 3

Chalk, in bbls.....@ 100 @ 35

China Clay, English.....@ 10.00@17.50

Cobalt, Oxide.....@ 100 @ 1.70

Whiting, common, @ 100 lb.....@ 30 @ 40

Whiting, Gliders.....@ 40 @ 45

Whiting, extra Gliders.....@ 55¢

Paris Green:

arsenic, kegs or casks.....12 @ 13

Kite, 100 lb or 175 lb.....12 @ 13

Kite, 14, 28, 56 lb.....13 @ 14

Paper Boxes, 2 @ 5 lb.....13 @ 14

Paper Boxes, 1 lb.....14 @ 15

Paper Boxes, 1/2 lb.....15 @ 16

Paper Boxes, 1/4 lb.....16 @ 17

**Putty.**

In barrels and 1/2 bbls.....14-10 @ 14

In tubs.....14 @ 16-10

In tin cans.....14 @ 2

In bladders.....14 @ 2

**Spirits Turpentine.**

In southern bbls.....@ 39 @

In machine bbl.....@ 39 @

**Glue.**

Low Grade.....@ 7 @ 9

Cabinet.....@ 11 @ 15

Medium White.....@ 10 @ 15

Extra White.....@ 15 @ 25

French.....@ 10 @ 25

Irish.....@ 10 @ 12 1/2

**Animal Fish and Vege-**

table Oils.

Linseed, City, raw.....@ gal. 39 @ 40

Linseed, City, boiled.....41 @ 43

Linseed, Western, raw.....@ 37

Linseed, raw Calcutta seed.....@ 58

Lard, Prime City, present make.....43 @ 45

Lard, Extra No. 1.....35 @ 37

Lard, No. 1.....30 @ 32

Cotton-seed, Crude.....22 @ 22 1/2

Cotton-seed, Summer Yellow,

prime.....20 @ 27

Cotton-seed Summer Yellow,

off grades.....25 @ 26

Sperm, Crude.....50 @ 53

Sperm, Natural Spring.....53 @ 55

Sperm, Bleached Spring.....58 @ 60

Sperm, Natural Winter.....57 @ 57

Sperm, Bleached Winter.....62 @ 65

Whale, Crude.....@

Whale, Natural Winter.....@ 46

Whale, Bleached Winter.....@ 49

Whale, Extra Bleached Win.....@ 52

Menhaden, Crude, Sound.....@ 25

Menhaden, Light Pressed.....@ 29

Menhaden, Bleached Winter.....@ 41

Menhaden, Extra Bleached Win.....@ 34

Tallow, Western, prime.....42 @ 43

Cocoanut, Ceylon.....54 @ 6

Cocoanut, Ceylon.....54 @ 6

Cod, Domestic.....34 @ 36

Cod, Newfoundland.....34 @ 40

Red Elaine.....28 @ 30

Red Saponified.....@ 4 @ 44

Bank.....@ 27

Straits.....@ 28

Live, Italian, bbls.....@ 64

Neapfoot, prime.....43 @ 45

Palm, prime, Lagos.....@ 54 @ 56

**Mineral Oils.**

Black, 29 gravity, 25@30 cold

test.....@ gal. @ 74

Black, 29 gravity, 15 cold test.....@ 84

Black, summer.....@ 7

Cylinder, light filtered.....13 @ 15 1/2

Cylinder, dark filtered.....11 @ 16

Paraffine, 23 @ 24 gravity.....84 @ 9

Paraffine, 25 gravity.....@ 84

Paraffine, 28 gravity.....@ 74

Paraffine, red, No. 1.....@ 84

In small lots 1/4 advance.

# THE IRON AGE.

The oldest paper in the world devoted to the interests of the Hardware, Iron and Metal Trades, and a standard authority on all matters relating to those branches of industry.





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